The Oil and Gas Journal

PUBLISHED WEEKLY BY THE
PETROLEUM PUBLISHING COMPANY,
211 S. Cheyenne
TULSA, OKLAHOMA

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Published weekly by The Petroleum Publishing Co., 211 South Cheyenne, Tulsa, Okla. Subscription price, United States and foreign, 1 year, $6.00; 2 years, $10.00; 3 years, $12.00; 5 years, $15.00. Single copies, 20 cents each. Back copies, when over a year old, 50 cents. Changes of address reaching the Tulsa office of the Journal by Saturday take effect with the following issue. Entered as second-class mail matter at Tulsa, Okla., under the Act of March 3, 1879

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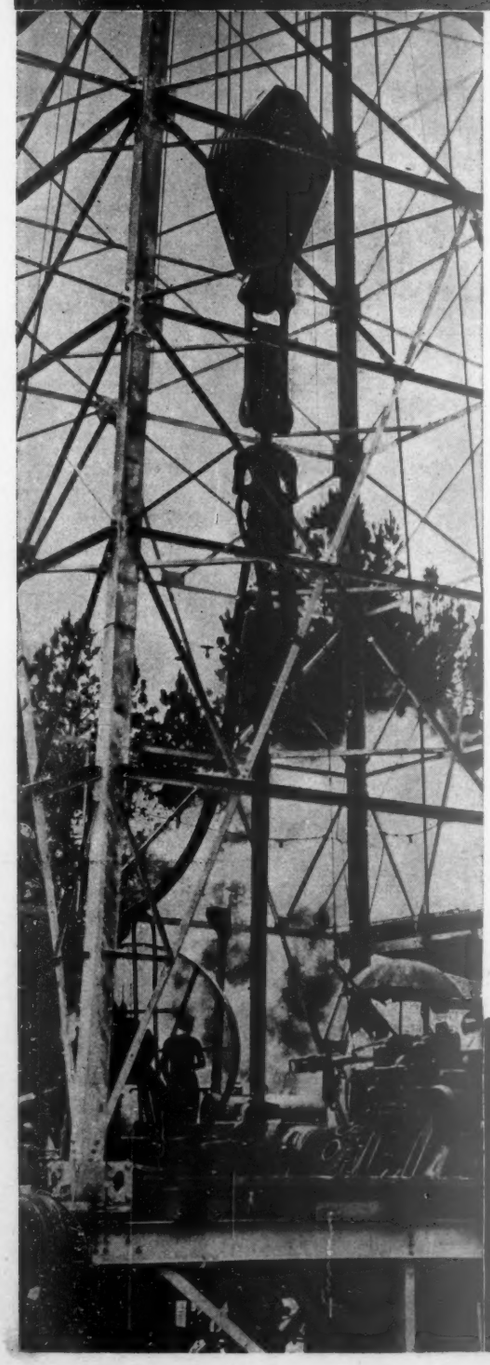

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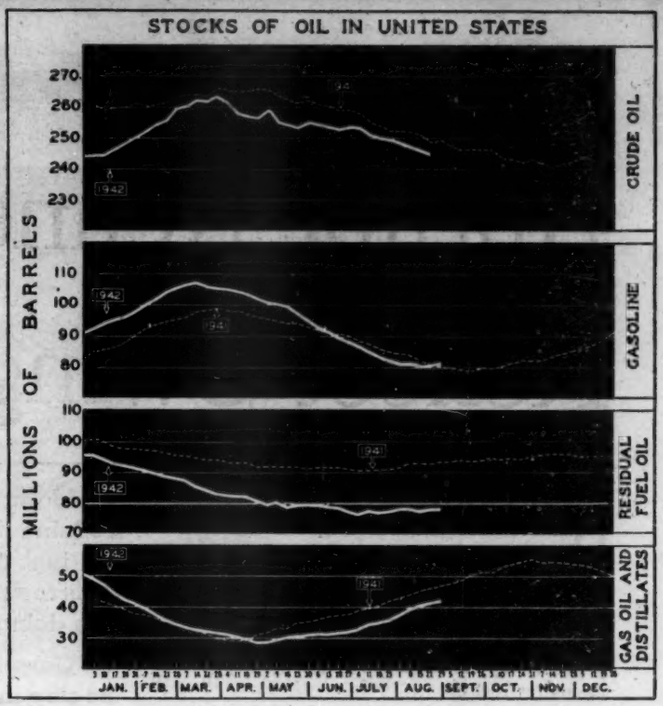
Trends

Shortages of Rigs, Crews May Nullify Part of M-68 Relief



SHORTAGES of rigs and drilling crews, oil men this week declared, will prove the chief deterrents to maximum realization of new development work in Illinois, Indiana, and Kentucky resulting from modification of M-68. Sufficient steel is in hands of operators, a survey of the tristate area by OPC indicates, for the drilling and completion of about 3,000 wells that would not have been authorized under the wider 40-acre spacing limitations.

Washington estimates are that 20,000 to 30,000 bbl. daily of additional production will be developed under the more liberal spacing terms of Supplemental Order 5 to M-68. OPC calculations on the additional production to result from M-68's modification are considered excessive by some operators who call attention to the small number of new sand fields discovered this year in the affected area and to the further fact that among those found since last December only a few have indicated extensive acreage and reserves.

Regardless of the practical results from modification of M-68 in a restricted zone, this joint action by OPC and the War Production Board intensifies certain aspects of trends that may become more significant as the war progresses. In the first place, the modification applies to an area where states have declined to enact conservation statutes.

A partial explanation for granting the spacing relief in the Illinois, Indiana, and Kentucky sector is that government agencies virtually agreed to this step in exchange for abandonment of legislation that would have forced the same result. Furthermore, the objectionable legislation threatened to undermine the entire WPB priority system of material control.

The WPB modification amendment was not a complete relaxation because of the reservation that operators may not resort to priority assistance in obtaining the materials necessary for drilling and equipping the more closely spaced wells. This means that P-98 will be of no practical benefit to sand well development on the 10 and 20-acre spacing patterns and likely will contribute to uneven drilling densities. An operator with limited equipment on hand may find it impossible to maintain the exploration pace by his neighbors limited only by the new spacing provisions and inventory of supplies.

Definite limit on the effective period of the modified order also indicates that OPC and WPB have not relaxed their policy of spreading withdrawals on a basis of reserves and extended producing ability.

CRUDE PRODUCTION *3,971,485 bbl. daily average—up 19,230 bbl. One year ago 3,990,270 bbl.*

CRUDE STOCKS *246,307,000 bbl. as of Aug. 22—down 126,000 bbl. One year ago 248,910,000 bbl.*

GASOLINE STOCKS *80,831,000 bbl. as of Aug. 29—up 388,000 bbl. One year ago 80,394,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *78,034,000 bbl. as of Aug. 29—up 27,000 bbl. One year ago 93,790,000 bbl.*

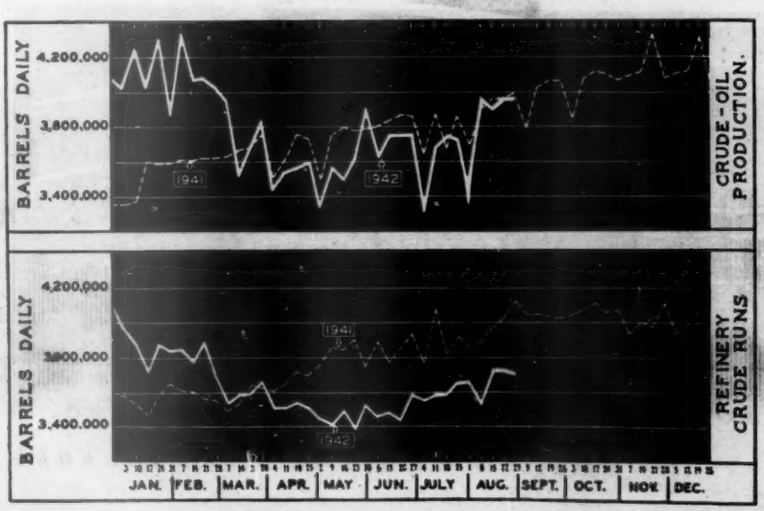
GAS OIL AND DISTILLATES *42,060,000 bbl. as of Aug. 29 — up 1,644,000 bbl. One year ago 47,089,000 bbl.*

REFINERY RUNS *3,697,000 bbl. daily week ended Aug. 29—down 26,000 bbl. One year ago 4,133,000 bbl.*

DAILY AVERAGE PRODUCTION FOR WEEK

	Aug. 29 crude oil	Aug. OPC quota all oils	Aug. 22 crude oil
Arkansas	71,100	81,600	72,100
California	738,275	767,200	735,750
Colorado	6,815	7,200	6,585
Eastern fields	97,100	110,000	97,250
Illinois	266,580	289,300	255,120
Indiana	18,350	20,680	16,975
Kansas	290,050	281,900	297,000
Louisiana	338,150	332,600	337,150
North Louisiana	*97,600*	.....	*97,100*
Louisiana Gulf Coast	*240,550*		*240,050*
Michigan	61,800	66,800	63,300
Mississippi	75,500	50,000	76,500
Montana	23,290	22,700	21,925
Nebraska	3,500	4,100	3,700
New Mexico	98,460	97,300	96,200
Oklahoma	378,600	415,500	380,150
Texas	1,412,350	1,396,700	1,401,300
East Texas	*363,000*	.....	*360,000*
West Texas	*226,800*		*224,550*
North Central Texas	*136,400*	.....	*137,300*
East Central Texas	*87,150*	.....	*89,250*
Texas Panhandle	*88,900*	.....	*93,900*
Texas Gulf Coast	*432,300*	.....	*419,250*
Southwest Texas	*77,800*	.....	*77,050*
Wyoming	91,565	95,000	91,250
Total United States	3,971,485	4,038,500	3,952,255
Total production, January 1-August 29, 1942			912,317,380 bbl.
Same period last year			894,828,845 bbl.

Texas shutdown days, August 23 and 29.



Abrupt Refinery Adjustments Reflect Swing to Fuel Oils

By H. STANLEY NORMAN

Manufacturing adjustments, which in some respects turn back the refining timetable to the late twenties, are being made to meet demand for fuel oil and to balance operations with available transportation. This review lays the predicate for the changes and shows what refiners are doing to adjust for war conditions.

Gasoline yield of 37.8 per cent on crude run to stills in June, a drastic step in the deemphasis of automotive-fuel production, is the lowest rate of recovery registered since 1928 on this chief source of revenue.

District 2 refiners plan to increase yields of kerosene and light fuel oils to an aggregate rate of 30 per cent on the crude charged, practically double the prewar cut.

Pacific Coast and inland refiners are processing larger percentages of crude runs to stills, absorbing part of the manufacturing load previously carried by Gulf Coast and Atlantic seaboard plants.

DEEMPHASIS of motor-fuel production in the industry's manufacturing operations in favor of substantially higher yields of burning oils is now reaching significant proportions. Greater sacrifices in the yield of gasoline, the refiners' most lucrative product, appear necessary in order to balance operations and to meet the higher demands for fuel oil.

Members of the District 2 refining committee decided last week at Chicago to strive for production of 30 per cent kerosene and distillate fuel oil in manufacturing operations over the next several months. The new production objective is practically double the normal yield of distillate fuels among District 2 refiners and compares with recent average cuts of about 25 per cent on these materials. The District 2 program is typical of the adjustments already made or proposed in some of the other refining areas in an effort to supply internal fuel-oil requirements and, at the same time, meet part of the East Coast demand.

The Bureau of Mines' monthly report, covering June operations, shows the yield of gasoline for the nation's refiners to have been 37.8 per cent on crude run to stills, a reduction of 2.1 per cent from the May and April rate of motor-fuel manufacture. Thus, after more than a decade of gasoline-recovery rates ranging above 40 per cent, the refining industry, in June, slipped back to approximately the conditions that prevailed in 1928. Meanwhile, the combined recovery of distillate and residual fuel increased to 41.3 per cent on the crude charged compared with yields of the same products aggregating 37.1 per cent a year ago.

All refining districts have contributed to the deflation of gasoline production. Tables 3, 4, and 5, dealing with yields of gasoline, distillate fuel oil, and residual reflect the revisions in operations by districts. Since March, five of the refining districts most intimately related to the supply of East Coast products have been combined in statistical reports. The omission of detail, however, does not obliterate the trend.

Shortages of fuel oil on the East Coast, drainage of supplies from other areas and the significant changes in manufacturing operations in order to correct the resulting maladjustments have made the entire industry burner-oil conscious. Current reports show that the country now has approximately 118,500,000 bbl. of gas oil, distillate, and residual fuels in inventory which is about 20,500,000 fewer barrels than a year ago. The reduction in inventory is chiefly in residual fuel oil which is 15,000,000 bbl. lower now than at the end of last August. Light fuel-oil stocks are about 5,500,000 bbl. lower than a year ago.

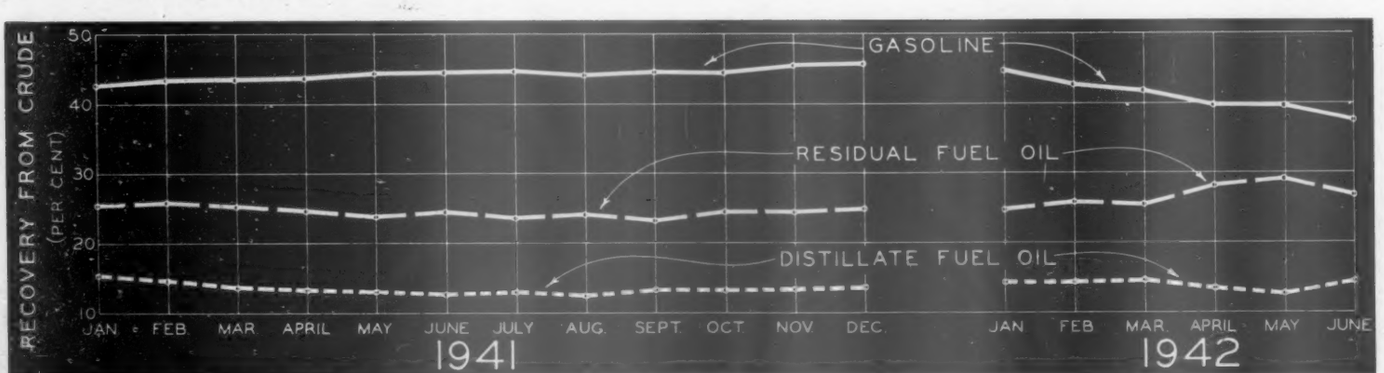
The most significant factor in the 15,000,000-bbl. reduction in residual fuel-oil stocks is that about 11,600,000 bbl. of the liquidation in the past 12 months has taken place in California, leaving a net deficit of 3,400,000 bbl. for remainder of the country. The five refining districts comprising the "censored area" now hold 2,268,000 fewer barrels of residual than at the start of last September and 3,305,000 fewer barrels of distillate fuel oil. The four inland refining districts contain 953,000 fewer barrels of residual stocks, a loss which is partially offset by an increase of 663,000 bbl. in distillate fuel-oil inventory.

A greater appreciation for the anxiety over the

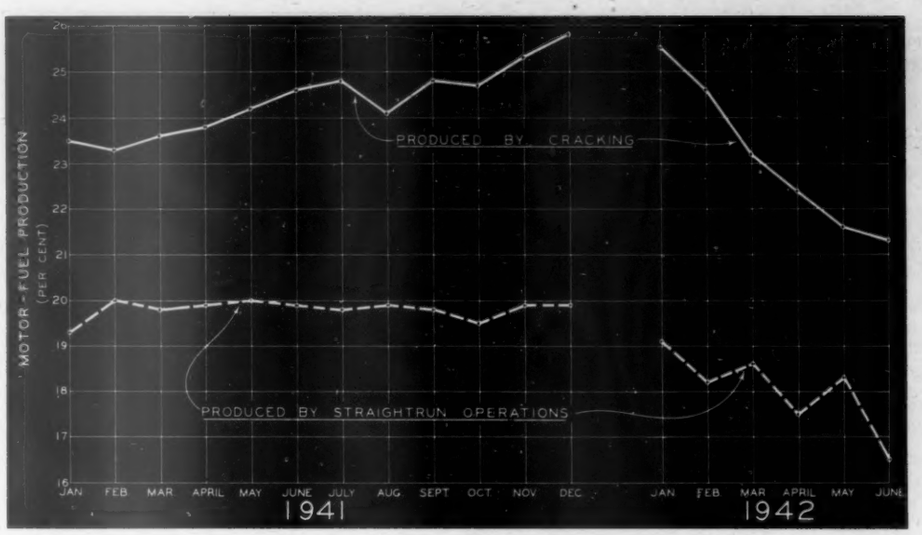
TABLE 1—YIELD OF REFINERY PRODUCTS
(Thousands of barrels)

	Gasoline*	Distillate fuel	Residual fuel
1942—			
January	53,049	16,902	29,405
February	45,232	15,194	27,254
March	46,238	16,214	28,095
April	41,843	14,002	29,440
May	42,703	13,436	30,971
June	39,827	15,210	28,352
1941—			
January	47,345	17,018	27,958
February	43,529	14,732	25,979
March	48,176	15,326	27,858
April	48,511	14,692	27,310
May	52,789	15,546	28,393
June	51,618	14,697	28,255
July	54,086	15,746	28,624
August	54,824	15,409	29,836
September	54,237	16,024	28,118
October	56,040	16,554	30,871
November	54,962	16,230	29,666
December	57,168	17,142	31,127

*Excludes natural gasoline.



Dip of the gasoline-production curve was accelerated in June, falling to the lowest mark registered since 1928, while fuel-oil production took up the slack


MOTOR-FUEL PRODUCTION (PER CENT)
PRODUCED BY CRACKING
PRODUCED BY STRAIGHTRUN OPERATIONS
JAN FEB MAR APRIL MAY JUNE JULY AUG SEPT OCT NOV DEC
1941
JAN FEB MAR APRIL MAY JUNE
1942

A sharp descent in the rate of cracked-gasoline production is both a cause and result of higher fuel-oil output

East Coast fuel-oil situation can be gained by considering the California inventory apart from remainder of the country. California contains nearly 70 per cent of the nation's residual fuel oil which, for all practical purposes, is unavailable for consumption east of the Rockies.

California Situation Critical

The Pacific Coast situation is critical in itself. California refiners are the chief suppliers of military requirements in the Pacific war zone. Requirements for fuel oil meeting Navy specifications are particularly heavy. Recently it was necessary to increase California production quotas in an attempt to arrest the draft on fuel-oil inventories. Demand for California oil, despite substantial reductions in the consumption of gasoline during recent months, is the highest in the history of the Pacific Coast industry.

California refiners are now processing 18.4 per cent of the crude run to stills against an average of 15.1 per cent in 1941 and compared with 12.9 per cent in January 1942. There have been significant swings in refinery operations in other districts. Plants outside the "censored area" in June processed 55.5 per cent of all crude charged to stills in contrast to 48.1 per cent of the runs in 1941. In January, the "censored area" refineries processed 53.3 per cent of the crude run to stills and 51.5 per cent in February. The contraction of operations, in the "censored area," from a relative standpoint, continued to a low of 43.5 per cent in May and then revived slightly to 44.2 per cent in June. Declines in the relative rate of refining shown by Table 6 in the "censored area" reflect the transportation obstructions tending to hem in Texas, Louisiana, and Arkansas refineries and producing fields. The declines in East Coast operations are the result of transportation shortages both from southwestern fields and South American countries.

TABLE 2—PER CENT YIELD OF PRODUCTS

	Gasoline	Distillate fuel	Residual fuel
1942—			
January	44.6	14.2	24.7
February	42.8	14.4	25.8
March	41.8	14.7	25.4
April	39.9	13.4	28.1
May	39.9	12.6	29.0
June	37.8	14.4	26.9
1941—			
January	42.8	15.4	25.3
February	43.3	14.7	25.9
March	43.4	13.8	25.1
April	43.7	13.2	24.6
May	44.2	13.0	23.8
June	44.5	12.7	24.4
July	44.6	13.0	23.6
August	44.0	12.4	24.0
September	44.6	13.2	23.1
October	44.2	13.1	24.3
November	45.2	13.4	24.4
December	45.7	13.7	24.9

Cracking Reduced Sharply

The relatively larger production of fuel oils in practically all refining operations has been accomplished chiefly by contraction of cracking. Production of gasoline declined to 1,324,000 bbl. daily in June, exclusive of natural gasoline and benzene, the lowest output reported in several years. The steep decline of gasoline produced by cracking from about 25.5 per cent in January to 21.2 per cent in June has been accompanied by a slightly modified drop in straightrun operations.

Refineries of the country recovered 15.9 gal. of motor fuel from each barrel of crude processed in June compared with 18.7 gal. a year ago and against 19.2 gal. in December 1941, when the United States became a combatant in the war.

The stimulation of fuel-oil production is even more significant in view of the reduction in crude runs to stills which averaged 3,605,000 bbl. daily during the first 6 months compared to 3,694,000 bbl. per day for the same period a year ago. Since the end of June, A.P.I. reports show refinery crude runs to have averaged 3,630,000 bbl. daily.

The current yield of distillate fuel oil is approximately the same as in March 1941, when crude runs were 70,000 bbl. per day higher than now. Likewise, residual fuel-oil output is higher now than in September 1941 when crude runs to stills were 4,049,000 bbl., daily or 537,000 bbl. higher than in June.

Demand for domestic residual fuel oil, indicated by production figures plus inventory liquidation, totaled 188,517,000 bbl. in the first 6 months, an increase of 7 per cent. Part of the requirements likely were offset by declines in imports, details of which are no longer reported. The curve on fuel-oil stocks, however, has remained practically constant since the start of July.

Most concern over the fuel-oil outlook is con-

TABLE 3—PERCENTAGE OF GASOLINE YIELDS BY DISTRICTS

	Av., 1941	1942 Jan.	Feb.	March	April	May	June
Appalachian	46.9	45.8	46.0	46.8	42.2	41.3	39.4
Ind., Ill., Ky.	52.1	52.4	49.8	50.8	49.1	45.5	45.2
Okla., Kans., Mo.	52.4	53.1	51.5	48.8	49.4	45.2	45.3
East Coast	38.4	41.3	37.6				
Texas Inland	54.5	52.4	50.7				
Texas Gulf Coast	43.7	42.0	39.7	38.0	36.4	38.7	36.3
Louisiana Gulf Coast	37.8	38.8	35.1				
Arkansas and N. Louisiana	41.8	40.7	40.7				
Rocky Mountains	50.9	48.9	55.4	47.3	45.3	49.2	43.1
California	33.8	35.0	34.5	36.0	31.3	31.6	28.1
Average	44.2	44.6	42.8	41.8	39.9	39.9	37.8

TABLE 4—PERCENTAGE OF DISTILLATE-FUEL-OIL YIELDS BY DISTRICTS

Appalachian	9.5	9.2	9.8	10.2	10.5	10.6	11.7
Ind., Ill., Ky.	10.5	11.3	11.2	11.2	11.4	11.6	12.9
Okla., Kans., Mo.	10.6	13.8	12.2	12.6	12.7	14.5	15.5
East Coast	18.9	19.8	20.9				
Texas Inland	3.7	3.8	3.7				
Texas Gulf Coast	16.4	17.5	18.3	18.2	15.7	13.7	16.8
Louisiana Gulf Coast	15.9	14.5	19.2				
Arkansas and N. Louisiana	8.6	12.6	10.9				
Rocky Mountains	8.3	8.9	10.1	8.0	11.3	12.3	10.8
California	13.1	11.7	10.8	11.4	10.5	10.4	10.9
Average	13.5	14.2	14.4	14.7	13.4	12.6	14.4

TABLE 5—PERCENTAGES OF RESIDUAL-FUEL-OIL YIELDS ON CRUDE BY DISTRICTS

	Av., 1941	1942 Jan.	Feb.	March	April	May	June
Appalachian	14.4	14.1	13.8	14.8	17.0	17.1	16.8
Ind., Ill., Ky.	18.7	19.7	19.2	19.9	20.7	22.6	20.2
Okla., Kans., Mo.	17.6	17.6	17.7	18.3	18.5	20.8	19.6
East Coast	23.9	28.5	32.7				
Texas Inland	21.4	22.8	23.0				
Texas Gulf Coast	23.4	21.6	22.3	25.0	28.5	28.9	25.3
Louisiana Gulf Coast	24.1	25.9	23.2				
Arkansas and N. Louisiana	24.5	23.1	22.7				
Rocky Mountains	22.9	25.9	30.6	25.0	26.4	29.4	23.1
California	41.5	42.3	43.8	40.7	45.0	44.7	45.1
Average	24.5	24.7	25.8	25.4	28.1	29.0	26.9

TABLE 6—PERCENTAGES OF CRUDE RUNS BY DISTRICTS

Appalachian	3.8	4.0	4.1	4.2	4.5	4.6	4.5
Ind., Ill., Ky.	17.8	18.2	19.0	19.6	19.8	21.3	20.1
Okla., Kans., Mo.	9.0	9.1	9.1	9.1	10.2	10.4	10.0
East Coast	15.4	15.6	14.8				
Texas Inland	4.7	4.8	4.9				
Texas Gulf Coast	25.8	26.6	25.4	48.8	46.6	43.5	44.2
Louisiana Gulf Coast	3.9	4.2	4.2				
Arkansas and N. Louisiana	2.1	2.1	2.2				
Rocky Mountains	2.4	2.6	2.2	2.7	2.5	2.2	2.7
California	15.1	12.9	14.1	15.5	16.4	17.6	18.4

TABLE 7—OIL-BURNER SHIPMENTS

	1942	1941
January	19,253	16,203
February	17,996	16,091
March	14,412	18,160
April	11,600	22,819
May	9,171	28,848
June	8,441	32,685
Total	80,873	134,806

centrated on distillate materials between kerosene and residual. About 2,445,000 automatic oil burners are in operation in the United States with nearly 63 per cent concentrated in District 1. The six New England states, shown by the accompanying map to represent the most concentrated consumption of heating oils, contain about 17.25 per cent of the burners and in the past each unit required more than 60 bbl. of fuel annually. About 41 per cent of the country's automatic burners are in the Middle Atlantic states of New York, New Jersey, Pennsylvania, Delaware, Maryland, and the District of Columbia. Burners in these six states normally require an average of 56 bbl. of fuel oil annually. The consumption per burner recedes to 26.5 bbl. annually in the South Atlantic states.

Distribution of Burners

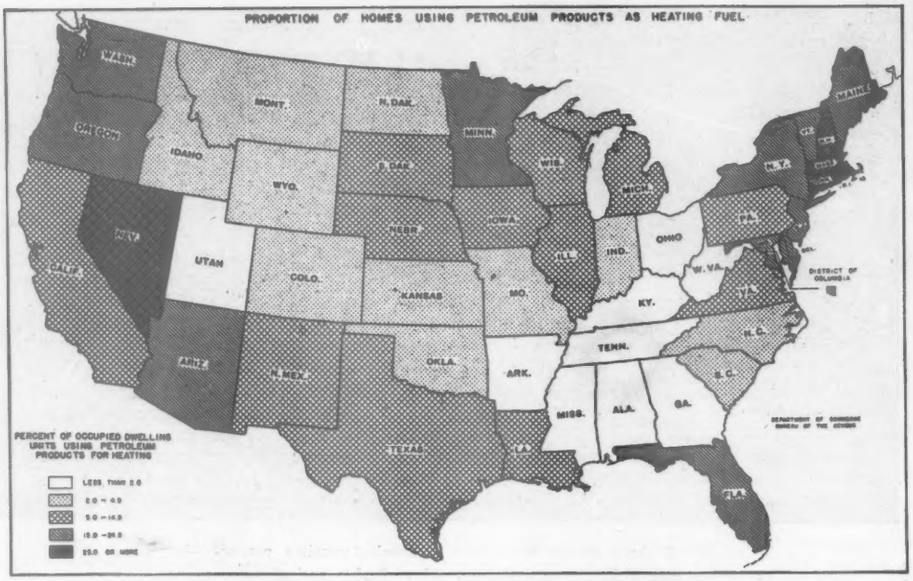
One of the most signtficant conclusions shown by the illustration of petroleum-heating distribution is the relatively high number of burners in the Middle West and Southwest. Between 5 and 15 per cent of the dwellings in Texas, Louisiana, and New Mexico are heated with fuel oil and the same ratio prevails in most of the northern group of midwestern states.

Scope of fuel-oil consumption in the Middle West is the basic reason why District 2 refiners have adopted a program of raising the manufacturing rate on light burning products during the winter and spring months. The midwestern plants, operators feel, can thereby meet its share of diverting products to the East Coast and, at the same time, supply most of the District 2 needs. From a supply standpoint, the District 2 program is sound, deserving of the praise government officials have accorded it. Economically, however, the attractions are less obvious because there will be a sacrifice in the yield of a product selling for 6 cents per gallon in favor of those currently quoted at 3 to 4.75 cents.

TABLE 8—DAILY AVERAGE PRODUCTION OF REFINERY GASOLINE

(Thousands of barrels)

	Straightrun	Cracked	Total
1942—			
January	733	978	1,711
February	686	929	1,615
March	665	827	1,492
April	611	783	1,394
May	631	746	1,377
June	577	747	1,324
1941—			
January	689	838	1,527
February	718	837	1,555
March	710	844	1,554
April	738	879	1,617
May	770	933	1,703
June	772	949	1,721
July	773	972	1,745
August	790	969	1,768
September	801	1,007	1,808
October	797	1,011	1,808
November	808	1,024	1,832
December	804	1,041	1,845



Consumption of home-heating oil is concentrated in the New England and Middle Atlantic states explaining the anxiety over East Coast supplies

Californians Seek Maximum Use of Pumping Equipment

LOS ANGELES, Calif. — A new attack on the problem of securing additional fuel-oil production in California is being made jointly by the Conservation Committee of California Oil Producers and the OPC Pacific Coast organization.

These groups plan to determine the amount of artificial lifting equipment in the hands of the industry and available for installation on heavy-oil wells. The data then will be presented to the OPC in Washington as a basis for amendment of Conservation Order M-68, which regulates the use of such equipment.

Information sought is the total number of pumping units now in inventory, the number of installed but idle pumping units which could be transferred to more-prolific wells, and the number of makeshift units which could be assembled from material now on hand.

Data as to the number of units which could be transferred are needed as a basis for amendment of the provision of M-68 which prohibits the installation or use of any artificial lifting equipment on a well whose drainage area is less than 10 acres. This provision tends to freeze pumping units to the particular wells on which they were installed on the effective date of M-68, regardless of whether the wells have since become nonproductive, and prohibits their use on other wells which may have since ceased to flow but would produce considerable quantities of crude on the pump.

The survey will be carried out by field committees and their chairmen, which make up the Conservation Committee organization. Each field committee is to determine the amount of equipment in the hands of independent operators. The major companies will report directly to the subcommittee in charge of the program. Data thus secured will be compiled by the District 5 OPC staff and forwarded to Washington for recommendation to the War Production Board.

Operators familiar with the WPB steel-allocation policy are convinced that before new steel will be available for manufacture into oil-industry equipment, and before restrictions regarding purchase and use of already fabricated material will be relaxed, it will be necessary for the industry to demonstrate that it has used up all its inventories, and is using equipment at the highest practical level of efficiency.

Need for immediate action is indicated by the course of fuel-oil storage in California during the first 7 months of the year, when the decline was more than 10,000,000 bbl. Current daily withdrawals are approximately 30,000 bbl., and utilization has increased from 281,000 bbl. per day during the first 6 months of 1941 to 342,000 bbl. daily during the first 6 months of 1942, because of the increase in military and war-industry use.

Frank Phillips Proposes Four Ways to Aid East's Oil Supply

CHICAGO.—Eastern politicians advocating a share-your-oil policy by rationing the Middle West this week were invited by Frank Phillips, general chairman of OPC District 2, to put the same effort behind four proposals which, he said, would do far more toward relieving their supply situation.

The District 2 chairman detailed extensive steps already taken by Mid-Continent and middle western refiners to relieve the East Coast.

The four proposed lines of action suggested by Mr. Phillips as having greater possibilities of relieving the eastern situation were:

1. To support the project for a pipe line from the East Coast to connect in southern Illinois with the 24-in. line already under construction from East Texas and thereby gain 150,000 bbl. a day.

2. To work for fair price adjustments to com-

pensate for extra cost of delivering petroleum to the East under changed conditions.

3. To ask that the petroleum coordinator be given authority to handle the oil problem without interference by other agencies.

4. To do a thorough job of substituting coal for oil heat wherever possible.

In the statement outlining his stand, Mr. Phillips pledged voluntary conservation and conversion in the Middle West so that more oil can be sent eastward.

War's interruption of normal flow of petroleum has forced Gulf Coast and eastern refineries to cease running at capacity, Mr. Phillips pointed out. To keep industry supplied with fuel oil and to build stocks for winter heating, he added, the rest of the industry has had to go over to making low-value oils instead of high-value gasoline.

The statement discloses that the Middle West is already sharing its supplies with the East on a large scale. Shipments of crude from District 2 to eastern refineries are at a rate of about 190,000 bbl. daily. More than 20 per cent of the gasoline, kerosene and fuel oils made in District 2 likewise moves east. Declines of 19 per cent in the District 2 consumption of gasoline in July, ascribed to voluntary reductions in driving, have aided in the program to divert additional supplies to the East Coast.

Details of District 2 shipments to the East Coast were reported as follows:

AVERAGE DAILY SHIPMENTS IN BARRELS OF PRODUCTS FROM DISTRICT 2 TO DISTRICT 1

Gasoline

	May	June	July
Railroad	47,550	45,324	25,438
Tank truck	1,014	846	1,007
Inland barge	7,328	8,151	9,998
Great Lakes	35,255	34,943	33,601
Pipe lines	1,835	3,622	2,754
Total	92,982	92,886	72,798

Kerosene

Railroad	13,745	13,788	12,432
Tank truck	55	58	60
Inland barge	15	549	.....
Great Lakes	535	1,277	5,297
Total	14,350	15,672	17.789

Domestic Heating Oil

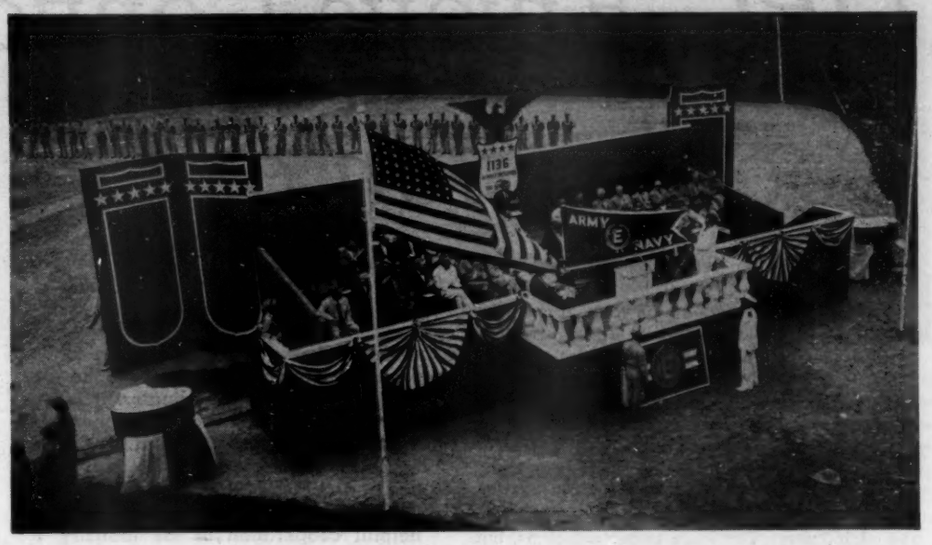
Railroad	13,207	11,698	20,024
Tank truck	39	40	60
Inland barge	398	422	843
Great Lakes	2,933	3,291	7,718
Total	16,577	15,451	28.645

Residual Fuel Oil

Railroad	68,595	56,077	67,920
Tank truck	.....	.....	.....
Inland barge	1,888	2,429	1,201
Great Lakes	8,782	7,922	8,632
Total	79,265	66,428	77,753

Approximately 25 per cent of the products manufactured in District 2 in August and those that will be made this month are earmarked for shipment to the East Coast. The figures in Mr. Phillips' statement covering this phase of the East Coast supply picture follow (barrels daily):

	August	September
Gasoline	54,161	54,508
Kerosene	35,294	25,587
Distillate fuel oil	57,806	49,754
Residual fuel oil	86,111	94,563
Total	233,372	224,412



The first Army-Navy "E" pennant awarded to an oil company for "high achievement in the production of war equipment" now waves over the Baytown Ordnance Works of Humble Oil & Refining Co., Houston, Tex. H. C. Wiess, president of the company, holding tips of the pennant on the speakers' stand, accepted the award for Humble which is producing toluene and other war materials from petroleum

This Week...

PRODUCTION.—First general modification of M-68 in an oil area authorized by WPB. Insiders see it as a tradeout with Sen. Scott Lucas to be rid of objectionable legislation. Practical results minimized because: 1. Few new sand fields exist in Illinois where it would apply; 2. Prohibits resort to priority assistance for equipment at modified locations . . . California operators launch inventory of pumping units; forerunner of request to use them where they will do most good, regardless of M-68 restrictions. Skid of fuel-oil stocks dictates prompt, effective action . . . Texas railroad commissioners ask for nonintervention by OPC in individual field allocations. Make attitude part of Senate public land subcommittee record along with producers' pleas for higher crude prices . . . OPC makes upward adjustment in Kansas' September quota. . . .

TRANSPORTATION.—Rail shipments recede slightly, to 817,980 bbl. daily . . . Peak sustained average may be around 950,000 bbl. daily, after District 2 makes additional tank cars available . . . Labor dispute causes brief interruption on "big inch" line . . . Right of eminent domain extended to Project 5 segment between El Dorado and Helena, Ark. . . . Subcommittee studying necessity for new line from Corpus Christi to Houston-Beaumont, Tex. refining area. Would free some southbound East Texas oil for War Emergency line. Unengaged East Texas-Houston systems then could be reversed to feed 24-in. line. . . .

REFINING.—Lowest rate of gasoline yield from crude since 1928 recorded in June . . . District 2 refiners project 30 per cent recovery of kerosene and other light fuel, double the normal yield; corresponding sacrifice in automotive gasoline . . . Pure's Smith's Bluff refinery to produce flexon, an emergency cousin of butyl rubber . . . Pacific Coast and inland refiners processing larger percentages of crude . . . Alkylation plant projected at Imperial Oil Ltd.'s East Calgary refinery. . . .

RATIONING.—Decision to ration eastern fuel-oil consumers reached. Details of plan expected by September 15. Normal regional requirements apt to be basic factor. Strong objections voiced against uniform allocations which ignore temperature variations between regions . . . "Share your oil" appeals by eastern politicians arouse midwesterners. Seaboard appellants advised to put same vigor behind extension of 24-in. line to East Coast, urge Washington to centralize oil matters in hands of Coordinator Ickes, convert to coal heat . . , OPC chief buffer fending off national rationing. . . .

MARKETS.—Gasoline demand surprisingly strong, in most areas. Prices steady. Eastern buyers seeking additional gasoline, fuel oil, from inland refiners . . . Crude buyers active throughout Mid-Continent, North and East Texas . . . Supplies for 24-in. emergency line chief concern of current scramble for crude contracts. . . .

RUBBER.—Restrictions on tires intensified. OPA reduces casing and tubing quotas to essential civilian drivers . . . Several refinery units, where conversion started earlier, nearly ready to produce emergency supplies of butadiene. . . .

SUPPLY.—PIWC economics committee estimates minimum eastern demand during next 7 months at average of 1,315,000 bbl. daily. . . .

OPC Enjoys Confidence and Cooperation of Oil Industry

By HENRY D. RALPH

The industry has good reason to be proud of its coordinating body, the Office of Petroleum Coordinator. It is an efficiently functioning group of men, recruited for the most part from the industry itself, which performs its many duties in defiance of the best bureaucratic traditions, and with the friendly and helpful cooperation of the industry it serves. Mr. Ickes, by his fairness, his energy, and his wise selection of personnel, has earned the respect and support of an industry which once suspected his motives.

WASHINGTON, D. C.—If the current agitation for centralization of federal agencies pertaining to oil should result in an investigation, there is little doubt that the Office of Petroleum Coordinator would come through with no serious criticism of its methods and with much praise for its accomplishments.

Among all the current complaints, justified or not, against alleged inefficiencies of the many war agencies, there has been no attack on OPC, either from the public, or from Congress, or from the oil industry. There are minor criticisms, but nothing which on investigation would substantiate a charge of ineptness or poor administration.

This is rather remarkable when it is realized that the OPC has operated in defiance of some of the best bureaucratic traditions.

In the first place, it is not headed by men of great popularity and large followings. As secretary of the interior, Harold L. Ickes never rated high in popularity among the American people, chiefly because of his propensity for telling truths with a poison pen instead of with sugar coatings. And the oil industry rather generally looked upon Mr. Ickes with the suspicion that he was seeking to impose federal control, if not government ownership, on the industry.

In the second place, OPC has operated with no legal authority and no specific power. While most wartime agencies have at least an executive order, if not a statute, OPC operates simply under a letter from the president to Mr. Ickes. As its name implies, OPC is only a coordinating body, with authority to do nothing but discuss, advise, and recommend, yet it has a record of direct action and accomplishment which stacks up favorably with that of any agency with plenty of written law behind it.

For another thing, the staff of OPC was recruited entirely from the industry it regulates, something which many other agencies have studious avoided. Believe it or not, this is one federal agency which includes no theorists, no social reformers, no elaborate machinery to maintain a nice system of checks and balances between the interests of management and labor, producers and consumers, big and little units of the industry.

Yet in spite of all this—or could it be because of it?—the OPC has sawed wood and done a job. It is a close-knit, direct-action body, which has tackled the immediate problems before it and handled them in practical and expeditious fashion. If there is any bickering or disharmony within the organization it has been quickly composed or kept well under cover.

The job of the Office of Petroleum Coordinator is to see to it that supplies of petroleum products are available when, where, and as required by the military services and for essential civilian needs. It was created in a letter from President Roosevelt to Secretary Ickes dated May 28, 1941, some 6 months before Pearl Harbor. This letter directed Mr. Ickes, as petroleum coordinator, to work with the state governments and with the various federal agencies concerned with oil to make recommendations and to coordinate their activities from the standpoint of national defense.

There are some 30 federal agencies which have something or other to do with the oil industry. The functions of some are very important, others very trivial. To some of these agencies OPC has had to play second fiddle, quite properly in many cases, such as to the Department of State in matters pertaining to foreign relations. With other war agencies OPC appears to be perpetually at odds, such as the Office of Price Administration. Other agencies have delegated authority to OPC or have accepted its recommendations. And in other fields OPC has gone ahead on its own and done whatever seemed necessary, without waiting for consulation or direction.

At the outset Coordinator Ickes appointed a federal council, composed of representatives of all federal agencies having anything to do with petroleum and the war. This has met a couple of times, but most of the "coordinating" is accomplished by direct contact between the staff men of whatever agencies happen to be concerned with a specific problem.

Task Not New to Ickes

Although Mr. Ickes is also secretary of the interior, coordinator of solid fuels, and a couple of other things to boot, he gives around 80 per cent of his time to his job as petroleum coordinator. The task is not new to him. He was interested in conservation long before he entered the federal Government in 1933. During the NRA days he was administrator of the Petroleum Code. Ever since then he has kept in close touch with conditions in the oil industry—too close to suit some oil men at times.

The appointment of Mr. Ickes as petroleum coordinator sent shivers down the spines of many people in the oil industry. They thought their worst fears were about to be realized and that at last Mr. Ickes had his clutches on the oil industry and would regulate it, regiment it, and control it out of existence. But such fears were gradually dispelled. Mr. Ickes has taken pains many times to insist that his only object is to help the oil industry do its part in winning the war and that he has no desire to be an "oil czar," to dictate to the industry, nor to impose drastic social reforms upon it. Neither word nor deed has belied these assertions, and the industry seems now to be convinced of Mr. Ickes' sincerity for certainly since Pearl Harbor he has had complete and unquestioned support.

As deputy petroleum coordinator, Mr. Ickes selected Ralph K. Davies, vice president of Standard Oil Co. of California. This selection greatly puzzled the industry at first, because Mr. Davies was not one of its prominent figures; in fact he was not widely known within the industry itself. Instead of being an able orator and having a forceful, "leader" type of personality, Mr. Davies was rather shy and self-effacing. Furthermore, his background in the industry was chiefly in marketing on the West Coast. Mr. Ickes' choice, however, proved to be a wise one, for Mr. Davies has shown himself to be an able administrator. In addition to having a competent grasp of the industry's problems, he has surrounded himself with men of ability and has permitted them to do their work without getting tangled up in administrative red tape and bureaucratic favoritism.

Staff Recruited From Oil Industry

One reason for the success of OPC is the administrative ability of Coordinator Ickes and Deputy Coordinator Davies. Another is the type of staff which they recruited. Almost every man in the outfit was taken directly from a responsible position in the oil industry or one of its satellites such as a supply house or transportation company. The secretarial staff is largely Civil Service and a few attorneys, statisticians and administrative experts were called in from other government agencies or elsewhere, but almost everyone anywhere near the policy-making level can truthfully call himself an oil man.

Some other government agencies have been afraid to take a step like this in recruiting their staffs. The War Production Board, for example, deliberately followed the practice of appointing industry branch chiefs from outside the industry concerned, and laid down the rule that no man from industry could pass on a matter affecting his company. Mr. Ickes, on the other hand, made his men sever their connections with their companies and told them to act like government officials without fear or favoritism. His confidence appears to have been well founded, for to date there has been no whisper of scandal that an OPC man has "thrown the game" in favor of his former company. There are no $1-a-year men in OPC, and most of the men are drawing government salaries considerably below what they were getting and could get again in the industry. Neither is there any spirit of self-perpetuating bureaucracy, for practically all the men would like, once the war is won, to have OPC abolished so they could go back to their old jobs.

Other government agencies, such as the Office of Price Administration, are suspected of being filled up with "professors," social reformers, and smart young college graduates with more bright ideas than practical experience. Such a criticism cannot be made of OPC. It has some lawyers, but only for legal work, and there is not a professor

Deputy Coordinator Davies and his chief assistants in a staff meeting. Clockwise, left to right, the men are: Robert E. Allen, assistant deputy; Gordon M. Sessions, director, public relations division; Edward B. Swanson, director, research division; Joseph A. Fanelli, special assistant; Stanley W. Crosthwait, executive officer; James Terry Duce, director, foreign division; Don R. Knowlton, director, production division; E. DeGolyer, assistant deputy; Ralph K. Davies, deputy petroleum coordinator; Bruce K. Brown, assistant deputy; W. R. Lange, secretary, petroleum supply and distribution board; Robert T. Collier, director, marketing division; William F. Huff, special assistant; W. D. Mason, director, facility security division; E. Holley Poe, director, natural-gas and natural-gasoline division; W. B. Heroy, director, petroleum reserves division, and Greer W. Orton, director, materials division. Staff members not in photograph are: J. Howard Marshall, general counsel; J. R. Parten, director, transportation division; Robert L. Minckler, director, petroleum supply division, and Special assistants George W. Holland, John M. Frey, J. Elmer Thomas

in the crowd beyond a couple of petroleum chemists and John W. (Doc) Frey, who is guilty of having taught economics, years ago.

Another, and probably the most important, reason for the successful operations of OPC is its close contact with the industry. It has not operated in a vacuum. It has five field offices, likewise staffed with men from the industry, and in each of the five districts it has six industry committees and many regional and topical subcommittees. There is also the Petroleum Industry War Council which meets in Washington each month and which has numerous committes whose activities are closely geared into OPC itself.

In selecting these industry committees, Mr. Ickes and his advisers have taken pains to see that every region and every interest in the oil industry has had adequate representation. During the life of the N.R.A. oil code the intraindustry politics and conflicting interests of competitive units kept things in a constant turmoil. Such conflicts of interest still exist in the oil industry, as everyone knows, but while they are constantly aired in committee sessions and conferences they have not noticeably interfered with the functioning of OPC. Members of the industry themselves have been astonished at the way in which they have been able to compose differences and achieve a spirit of harmony and cooperation when the time has come to knuckle down and promote the war effort.

The OPC is now operating on an annual budget of $3,365,000. It has 600 employes in Washington and 200 in its field offices. The Washington staff is not expected to increase greatly beyond its present size, unless new duties are placed on it, but the field force probably will grow considerably. Starting with only a few rooms a little more than a year ago, the OPC spread over 20,000 sq. ft. in the Interior Department's new building shortly after Pearl Harbor, and recent shifts have now given it 90,000 sq. ft. of office space.

The work of the OPC is divided up among a dozen divisions, each with clearly defined jurisdiction, and is supervised by three assistant deputy coordinators and several special assistants to the deputy coordinator. Coordinator Ickes and Deputy Coordinator Davies are in constant consultation with their staff members, and lights burn late every night in the OPC offices.

The leading personnel, operating methods, and activities of the several OPC divisions will be discussed in detail in other articles in this series to appear shortly in The Oil and Gas Journal.

Condensed OPC Directory

New Interior Building, Eighteenth and C Streets, N.W.
Phone REpublic 1820

COORDINATOR'S OFFICE

	Rm.	Ph.
Ickes, Harold L., coordinator	6156	5000

DEPUTY COORDINATOR'S OFFICE

Davies, Ralph K., deputy coordinator	6654	3831
Allen, Robert E., assistant deputy	6647	4401
Batzell, Elmer E., special assistant	6070	2181
Brown, Bruce K., assistant deputy	6646	2066
DeGolyer, E. L., assistant deputy	7516	4459
Frey, Dr. John W., special assistant	4345	4272
Huff, William F., petroleum consultant	7352	3052
Thomas, J. Elmer, special assistant	7442	4735
Fanelli, Joseph A., special assistant	6642	4104

PRODUCTION DIVISION

Knowlton, D. R., director	7410	4861
Schilthuis, Ralph J., assistant	7410	2907
Bauchens, Fred C., development	7417	4509
Crowell, Thomas L., allocations	7420	4831
Dumbros, N. G., reserves	7420	4831
Ellis, George L., spacing	7419	4507
Flood, H. Lee	7418	4508

REFINING DIVISION

Robinson, P. M., acting director	5260	4786
Bailey, Douglas P., operations section	5040	4877
Cragin, Robert B., supply section	5024	3237
Miller, Max B., construction section	7443	4560
Parkhurst, George L., new facilities	5254	3941

TRANSPORTATION DIVISION

Parten, J. R., director	6629	4418
Archbold, S. D., inland waterways	3647	4333
Cowles, L. R., assistant director	6620	3658
Eberle, W. C., marine section	6622	4019
Kinsolving, W. C., associate director	6629	3557
Sears, D. P., pipe-line section	6624	4833
Turner, John A., motor transport	6619	4300
Wilson, Boyd, rail section	6623	4620

NATURAL GAS-NATURAL GASOLINE DIVISION

Poe, E. H., director	7314	4736
Ducker, R. W., natural gas	7322	2524
Pew, James E., natural gasoline	7318	4871
Raigorodsky, P. M., assistant director	7314	4774

MARKETING DIVISION

Collier, Robert T., director	4257	4646
Arnold, D. C., asphalt section	4022	2787
Best, Paul A., assistant director	4258	3518
Cooper, Howard, lubes and greases	4344	4313
Eliender, J. H., motor-fuels section	4258	4434
Juliber, E. B., motor-fuel delivery	4345	2191
MacMillan, Robert, materials	4038	2781

PETROLEUM SUPPLY AND DISTRIBUTION BOARD

Lange, Walter R., executive secretary	7512	4744
Norris, T. Harry, tanker expert	7512	4744

LEGAL DIVISION

Marshall, J. Howard, chief counsel	6649	4100
Avery, W. E., marketing	4240	2978
Friedman, R. E., assistant chief	6424	668
Hudson, D. M., assistant chief	6422	793
Jones, John F., production	7415	3298
Leonard, J. H. F., refining	5346	4832
Levy, Adolph, general	6426	4838
Shadle, Webb, principal attorney	7448	4834
Wolf, Justin R., allocations	6070	2130

MATERIALS DIVISION

Orton, Greer W., director	4212	4585
Bell, R. R., export section	4013	2796
Breyfogle, L. W., surveys	4021	3683
Hansen, H. R., excess stocks	4214	4622
Harmon, I. G., WPB relations	4213	3430
Kent, H. M., scrap—salvage	4216	2140
McCarty, J. H., domestic	4218	4354

PETROLEUM SUPPLY DIVISION

Minckler, Robert L., director	7450	4834
Sauer, R. C., assistant director	7450	2083

FACILITY SECURITY DIVISION

Mason, W. D., director	3641	4172

FOREIGN DIVISION

Duce, James T., director	4442	4863
Ballou, G. T., refining	4448	4789
Chapman, A. H., assistant director	4442	2655
Crampton, W. D., transportation	4448	4788
Kurtz, J. D., transportation	4448	4891
Nuland, L. H., production	4444	2534
Snodgrass, C. S., British Empire	4450	4789

PUBLIC RELATIONS

Sessions, Gordon M., director	7515	4445
Yocom, Herbert A., assistant director	7513	3844
Caminita, Ludwig, Jr	7517	4650

ADMINISTRATIVE DIVISION

Skidmore, E. J., special assistant to executive officer	6415	4363
Thompson, Glenn D., assistant	6412	4634

DIVISION OF RESERVES

Heroy, William B., director	7516	4459

RESEARCH DIVISION

Swanson, E. B., director	7315	649
Ambrose, O. S., assistant	7317	4777
Wye, Ernest A., Jr.	7321	4785

STATE CAPITALS...

KANSAS

UPWARD REVISION of the Kansas' production quota in September to 291,900 bbl. daily was certified last week by the Office of Petroleum Coordinator. Previously, the state's quota had been fixed at 285,300 bbl. The revised allowable represents an increase of 10,000 bbl. over the August quota for Kansas.

GAS ALLOWABLES for September, October and November probably will be assigned this week in two fields based upon recommendations and testimony presented at a Corporation Commission hearing in Wichita, Kans., August 27. The fields covered at the hearing were Cunningham, in Kingman and Pratt counties, and Otis, in Barton and Rush counties.

Arthur R. Jones, formerly a member of the Corporation Commission, was absent from the Wichita hearing and it was announced that he had retired from the body to accept service in the Army.

CALIFORNIA

CALIFORNIA'S SEPTEMBER daily quota has been set by the Office of Petroleum Coordinator at 791,500 bbl., of which 41,500 bbl. daily will be reserved for natural gasoline and condensate production, leaving a net crude-oil allocation of 750,000 bbl. per day. The August quota was originally set at 726,200 bbl. per day, but this was subsequently increased to 750,000 bbl. daily from August 16 to 31, inclusive, to provide additional supplies of fuel oil. The allotment for September will therefore be at the same rate as prevailed during the last half of August, although there will probably be some adjustments in allocation among pools to take care of new completions and other factors. The increase in the state's daily quota to 750,000 bbl. of crude oil has been anticipated for several months and reflects the high demand for fuel oil that has prevailed all year. Fuel-oil demand is expected to show a substantial increase during the remainder of the current year, but commercial gasoline demand on the other hand is expected to show a significant decline.

Sales of motor fuel to civilian consumers during July decreased 14.3 per cent from sales during the same period last year.

During January 1942, the first month after Pearl Harbor, gasoline sales increase 10.08 per cent. Gains over 1941 dropped to 2.6 per cent in February. Since then domestic sales of gasoline have been downward. In March, sales declined 0.77 per cent and in April commercial sales of gasoline were 16.11 per cent below April of last year. In May sales were 13.86 per cent below the same month in 1941 and in June sales were down 7.66 per cent. Owing to the gains in January and February, the net decline during the first 7 months is 6.5 per cent.

No data are being released as to the amount of gasoline, fuel oil and lubricating oil used by the federal Government for the armed forces, but it is generally believed that this increased demand has offset declines in the civilian market.

The position of stocks on the Pacific Coast is causing anxiety among those confronted with the job of providing adequate stocks of refined oil to meet civilian and military requirements, but for some reason this factor has been receiving only passing attention. Since the first of the current year fuel-oil stocks have been reduced approximately 10,000,000 bbl. and diesel and gas-oil stocks have been reduced about 1,000,000 bbl. About 50 per cent of this total of fuel oil is straightrun and the balance has been cracked. For this reason some refiners may experience difficulty in meeting Navy specifications.

TEXAS

OATH OF OFFICE as a member of the Texas Railroad Commission has been administered to Beauford Jester of Corsicana, Tex., the successful candidate in the Texas runoff Democratic primary. Mr. Jester was appointed by Gov. Coke Stevenson to fill the unexpired term of Lt. Jerry Sadler who resigned several weeks ago. On the eve of his induction into the Army, and the final day for candidates to file for office, Lieutenant Sadler submitted his resignation to Governor Stevenson and recommended appointment of a friend for the unexpired portion of his term. Under the circumstances, the Texas Democratic executive committee reopened the ballot. Lieutenant Sadler returned to Austin and resumed his seat on the commission for a brief period. Governor Stevenson declined to accept Lieutenant Sadler's recommendation on appointment of a successor but said he would designate the victorious candidate in the primary.

Mr. Jester accompanied Ernest O. Thompson, commission chairman, to Midland, Tex., last week to appear before the Senate public lands subcommittee. The new member concurred with testimony of the chairman.

NEW MEXICO

CHANGES IN PRORATION areas to make the field designations conform more closely with geological structures will be considered by the Conservation Commission at a hearing September 25. At the same time, the commission's approval will be asked on the operation of a repressuring plant in the Maljamar field.

Last week, the commission set the September allowable at 98,100 bbl. daily, the quota certified by the Office of Petroleum Coordinator.

MONTANA

STOCKS OF CRUDE OIL in Montana were reduced 85,154 bbl. in July, according to a report issued this week by the Conservation Board. Demand for 775,141 bbl. of crude was met by production of 689,987 bbl. and the remainder was withdrawn from stocks which, at the end of July, totaled 1,132,185 bbl.

Montana refineries processed 519,209 bbl. of crude during the month; fuel and losses accounted for 1,391 bbl. and a total of 135,915 bbl. were exported to Canada. Other states in this country received 118,626 bbl.

The production was contributed chiefly by Cut Bank and Kevin. The Cut Bank field produced 457,013 bbl.; Kevin and Border, 182,643; Cat Creek, 12,223; Pondera, 22,361 and other fields. 15,747 bbl. in July.

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OPA Authorizes Higher Price To Offset Loss of Tank Cars

WASHINGTON, D. C.—The Office of Price Administration September 1 authorized tank-truck operators to charge prices higher than those prevailing last March in shifting to new routes required by withdrawal of railroad tank cars in petroleum movement.

Higher rates are subject to OPA adjustment and will not be the basis for increased selling prices of products moved.

RFC Issues Regulations Defraying Shipping Costs

WASHINGTON, D. C. — The Defense Supplies Corp. has issued regulations under which it will compensate shippers of petroleum products to the East Coast area for sale there at ceiling prices despite higher transportation costs.

Regulations are obtainable at Washington and New York offices of Reconstruction Finance Corp.

Decision Reported Reached To Spread Fuel-Oil Curb

WASHINGTON, D. C.—Special committee appointed by Donald Nelson on fuel-oil rationing was understood late September 1 to have reached a decision and to be preparing an announcement for early issuance.

Reports are that committee has decided that consumer rationing of fuel oil is necessary throughout all of District 1 and also all or most of the area north of the Ohio River and probably also in Iowa and Minnesota.

Expect 20,000 at Wartime Chemical Show This Fall

The National Chemical Exposition, sponsored by the American Chemical Society, will be held November 24-29, at Chicago, Ill. Headquarters of the combined show and parley will be the Hotel Sherman.

Educational Advertising Cooperation Authorized

WASHINGTON, D. C.—The oil industry was authorized by the Office of Petroleum Coordinator for War last week to conduct joint industry advertising campaigns designed to inform motor-car owners as to the proper methods of caring for and operating automobiles.

Addressed to all oil marketers and all petroleum industry committees established by OPC, the formal authorization (Recommendation 56) states that the conservation of motor vehicles is requisite to the prosecution of the war.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

A Fresh Start

Ever since it became evident that the manufacture of automobiles was destined to suffer a holiday of perhaps several years' duration, it has been interesting to speculate upon what the family car will be like, once the manufacturers turn their attention away from jeeps and tanks, and back to their peacetime pursuits.

Automobile designers have always been several jumps ahead of the buying public in their conception of the possible progress and efficiency of the motor car. For while they are making sketches on their drawing boards for next year's models, they are planning yearly models for at least 5 years ahead. One reason they don't condense this progress into a single year, is that the public is too conservative to accept anything so radically different from that with which it is familiar. Thus the changes are slow. Another reason is that the manufacturers are unwilling to go to the expense of scrapping so much of their capital investment in dies and machinery.

Speculation on the new postwar models runs from the conservative to the extreme. Some observers have opined that the postwar automobile will be a creature totally unlike the 1942 version. They paint word pictures of a machine that will make today's cars look horse-and-buggyish in comparison.

Other observers, taking a more practical stand, predict that the immediate postwar models will be not much unlike the 1942 model. This position is based upon the assumption that expediency will be the paramount issue. In other words, the need for cars will be so great and so urgent, that manufacturers will simply dust off their 1942 dies and pick up where they left off this spring. There won't be time, these writers argue, for new designs, new dies, and new machines. Once some of the slack is taken up, then, and only then, will designers and manufacturers turn their attention to improvement.

We hope a middle ground will be found somewhere between these extremes. War, in addition to bestiality and destruction, breeds progress. When man's inventive genius is stimulated, even though he is on the hunt for more efficient means of destroying, a byproduct of his efforts are means of improving that which is needed in peacetime. Out of this war will come new materials, new approaches, new discoveries that will be of vital importance to civilization in the years to come. It would be foolish not to take advantage of these improvements, and to derive some benefit from the accelerated research activity now in progress.

In the vanguard of these improvements are the products of the petroleum industry. By the time the war is over, if it lasts as long as it now appears it will, 100-octane motor fuel will be commonplace. Lubricants will have undergone vast improvements. It would be retrogression to resume production of 1942 motor cars when motors, motor fuels, metallurgy, and improved knowledge of streamlining fairly shout for a motor vehicle designed to take advantage of these advances.

Apparently the greatest obstacle to this end is the investment the manufacturers have in dies and machinery. Our answer to this is that the prosecution of the war can find a need for the metal now tied up in these fast-growing-obsolete items. It appears logical that the surest guarantee of a fresh start is the scrapping of present dies, and donating of the metal to the scrap campaign. Then, once Hitler and his infamous allies are disposed of, the automobile industry can start afresh, minus inhibitions, or a feeling that it must avail itself of leftover supplies. It will be fortified with the results of a concentrated period of research—with advances at its disposal that would have taken many times as long to achieve under normal conditions. It, and its equally progressive partner, the oil industry, can then begin a period of truly astounding progress and prosperity.

Consumption of Gasoline May Fall 11.5 Per Cent for Year

By J. P. O'DONNELL

Factors indicating a decline of 11.5 per cent in the demand for motor fuel this year and a corresponding drop in 1943 are reviewed here.

Approximately 10 per cent of company-owned and leased stations in the nation have been closed. The mortality rate on retail outlets is expected to increase to about 25 per cent after Labor Day.

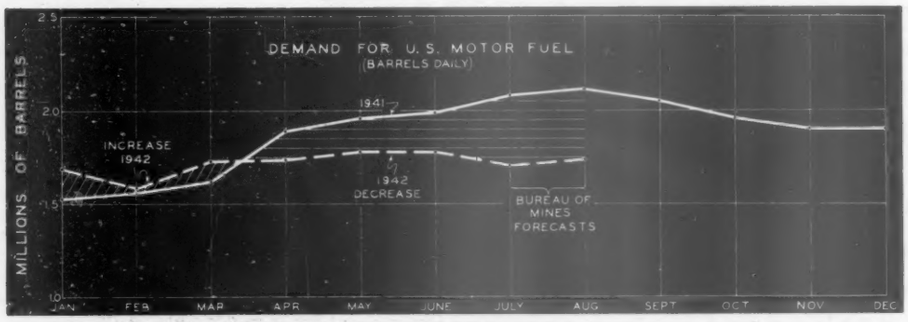
Eastern consumers indicate preference for smaller ration of gasoline rather than sacrifice fuel oil.

Peak sustained rail shipments will not exceed 950,000 bbl. daily, most observers believe.

NEW YORK.—In spite of rationing throughout the East, curtailed deliveries of gasoline in the Northwest and the rubber shortage which affected the entire country, demand for motor fuel produced in the United States was off only slightly more than 2 per cent in the first half of 1942. However, this fact cannot be interpreted as an indication that really drastic curtailment in the demand for gasoline is not in prospect.

A factor that was largely accountable for the comparatively small decline in the first 6 months of 1942 was the actual increase in demand in the first quarter. Since then there has been an expanding margin of decline which reached an actual 10.7 per cent deficit in June and, according to the Bureau of Mines, an estimated 18 per cent in August.

Therefore, while demand for gasoline approximated 311,000,000 bbl. in the first half of 1942, off about 7,400,000 bbl. or 2.25 per cent from last year, the most optimistic predictions for this year as a whole envisage a demand of not more than 608,250,000 bbl., off about 78,250,000 or almost 11.5 per cent from 1941. Demand in 1943 is expected to be at least as much lower so that it will be more than 20 per cent under 1941.



Retail Sales Lower

Since these figures include both military consumption and exports, which, in aggregate, are substantially higher than they were in 1941, it is obvious that retail sales have been curtailed even more. Efforts of oil-industry committees to gage the effect on service stations have been unsuccessful but individual company reports indicate that for the nation as a whole approximately 10 per cent of company-owned or leased stations have been closed. It is believed that an even higher percentage of independent stations, particularly ill-equipped, small-gallonage marginal outlets, have been closed. The mortality rate is expected to increase after Labor Day to the point where from 20 to 25 per cent of all service stations will be closed by the end of the year.

An expedient followed by many companies is that of reducing the number of stations in areas served by more than one. Increased emphasis is being placed on accessory sales, but generally this escape has failed to offset gallonage losses. Concerted efforts are being made to obtain lower rentals on leased stations though this type of outlet is frequently maintained as well as possible to offset its higher cost. The draft and higher wages paid by defense industries have resulted in a loss of manpower that has forced the closing of many stations. This problem is especially serious for those companies which have only one outlet in a community and thus face complete loss of their local market.

The effect of rationing on consumers has not been severe and so far it has brought little complaint except from traveling salesmen who have been hard hit. By confining use of their cars to essential purposes and eliminating much of their normal pleasure driving, most motorists in the rationed East Coast area have found their 4-gal.-per-week quota sufficient. Car pooling has helped to maintain work and recreational activities to a satisfactory degree.

Most motorists, particularly those who reside in oil-heated homes, apparently are willing to have their gasoline ration reduced even further if it will help assure them of an adequate supply of fuel oil during the winter. It is generally believed that there will be no reduction in ration card values "until after the election," thus indicating that persons holding this belief do not feel that politics have yet been fully divorced from the war effort.

This fact and the numerous, often irreconcilable, statements issued on the need for rationing have resulted in confusion in the public mind. Reluctance of domestic consumers to convert their heating units from oil to coal is probably attributable to this confusion. In his most recent report to Petroleum Coordinator Ickes, J. A. Brown, District 1 chairman, said that not more than 1 per cent of convertible domestic heaters have been switched but that the conversion rate in industry has reached 52 per cent of potentialities.

As a result of the substantial conversion of industrial units, it is believed that foreseeable available transportation will be sufficient to meet essential demands for residual fuel oil. On the other hand, lack of conversion of domestic heating units is expected to necessitate a curtailment of possibly 25 per cent in the consumption of light heating oil. Rationing plans have been completed by the OPA and, while complex, have been regarded as highly acceptable by at least some oil-company officials. It is expected that homeowner registration will be undertaken by September 15.

Residual Outlook Adequate

All essential residual fuel-oil demands and 75 per cent of heating-oil requirements are expected to be met without reducing the value of gasoline ration cards. Declining stocks of gasoline indicate that consumption is running in excess of desirable levels but it is possible that a good portion of the recent decline in stocks is a result of the general tank filling that was permitted just before the permanent rationing plan went into effect. Studies of the gasoline situation by oil companies and committees are handicapped by the fact that the OPA has not given out the number of ration cards that have been issued. This knowledge would be invaluable to the industry in computing demands.

Oil-industry representatives who have studied the East Coast transportation problem foresee a definite shortage if additional tanker capacity is not forthcoming or if a substantial conversion of domestic heating units does not take place. Even though almost 30 tankers were completed in United States shipyards in the first 7 months of this year, fully as many as were delivered in all of 1941, increasing military and naval requirements are expected to prohibit the use of any of them in commercial service for some time. Reported coastwise shipments of approximately 200,000 bbl. per day are not even expected to be continued through the winter.

Shipments into District 1 via rail are confidently expected to increase, but the 1,000,000-bbl.-per-day figure that has been predicted is believed to be beyond reach. These shipments may near the 1,000,000-bbl. mark, but are not expected to exceed 950,000 bbl. per day before severe cold weather sets in and then are expected to decline somewhat. Since the industry's main reliance in meeting the coming fall and winter demand in the Northeast is railroad transportation, a severe winter that would stimulate heating oil demand and curtail rail traffic could result in a serious situation.

Spacing Regulations Modified in Illinois, Indiana, Kentucky

WASHINGTON, D. C. — Well-spacing restrictions of Conservation Order M-68 were halved and quartered this week in Illinois, southwestern Indiana and northwestern Kentucky sand fields, depending on the depths of wells. The modification of M-68, said to have been under consideration and preparation for several weeks, was issued August 31 by the War Production Board and will remain in effect until January 1, 1943.

Liberalization of spacing restrictions on sand wells in the tristate area was implemented by Amendment 5 to M-68 which previously had limited new drilling to tracts of not less than 40 acres. The amendment may be extended beyond January 1 if War Emergency Pipelines, Inc.'s 24-in. crude line from Longview, Tex., to Norris City, Ill., is incomplete on that date.

Only Sand Fields Affected

The modified order applies only to drilling in sand fields or to sand formations. The limitation of 40-acre spacing continues in limestone fields.

Amendment 5 provides that wells to 2,500 ft., or a lesser depth, may be drilled on each 10 acres, if the location is 466 ft. from any drilling or producible well. Below 2,500 ft. one well may be drilled to each 20 acres, if the location is at least 900 ft. from any existing producer. In both cases all separate property interests must be consolidated, the same as under the original M-68, and wells must be 330 ft. from the property line and not on acreage attributable to any other well.

Furthermore, the amendment specifies that "material required to drill, complete or provide additions to such well is on hand or available for such use or is to be obtained without the use of priorities assistance." Well completions in the affected area under the amended conservation order must be reported to the Chicago office of OPC and all oil produced under its provisions must be earmarked for transportation to the eastern seaboard.

The modification of M-68 in Illinois, Indiana, and Kentucky, Washington authorities said, is the outgrowth of an agreement between Sen. Scott Lucas, Illinois, and other midwestern oil-state senators on the one hand and WPB Chairman Nelson and Coordinator Ickes on the other. Senator Lucas and his colleagues, it is understood, exacted an agreement from Messrs. Nelson and Ickes that they would modify M-68 in midwestern oil states in return for abandonment by the senators of legislation which WPB feared would disrupt the priority system.

Senator Lucas sponsored a bill which would have specifically prohibited priority control of oil-field equipment and would have nullified restrictions on drilling. The proposed legislation was eventually tacked to the Florida Canal bill. Finally, the restrictive legislation was withdrawn entirely. WPB feared that limitations on its priority power over oil-field equipment would possibly destroy the entire material-control system and impede the war program. Consequently, the agreement to liberalize restrictions in Senator Lucas' area is said to have been negotiated and Amendment 5 is the result.

Text of Supplementary Order M-68-5

General exception authorized by Paragrah (C) (10) of Conservation Order M-68 as amended.

Whereas immediate production of large quantities of oil in the State of Illinois and portions of the states of Indiana and Kentucky is necessary for the continued effective operation of industries engaged in vital war production and for essential civilian uses:

Now, therefore, it is hereby ordered that:

1047.10 Supplementary Order M-68-5—(A) Definitions. The definitions of Conservation Order M-68, as amended from time to time, shall apply in this order.

(B) Oil wells drilled in the State of Illinois and portions of the states of Indiana and Kentucky. The provisions of Paragraph (B) of Conservation Order M-68, as amended, shall not apply to any case where material is to be used by an operator to drill, complete or provide additions to any oil well to any sand formation or sand reservoir in the State of Illinois, in the counties of Clay, Daviess, Dubois, Gibson, Greene, Knox, Martin, Perry, Pike, Posey, Spencer, Sullivan, Vanderburgh, Vigo or Warrick in the State of Indiana, or in the counties of Breckinridge, Butler, Christian, Daviess, Grayson, Hancock, Henderson, Hopkins, Ohio, Logan, McLean, Muhlenberg, Todd, Union or Webster in the State of Kentucky: Provided that no well shall be "spudded" by such operator unless:

Specific Limitations

1. As to any oil well which is drilled to a depth of not more than 2,500 ft.:

(i) Such well is drilled on a drilling unit of not less than 10 surface acres.

(ii) The proposed drilling unit upon which such well is located consists entirely of acreage which is not attributable to any well other than such well. (The acreage attributable to wells offsetting the proposed drilling unit shall be determined by assigning to such wells an acreage equivalent to that in the existing well density or drilling pattern contiguous to such wells.)

(iii) All separate property interests in the proposed drilling unit shall have been consolidated prior to the actual commencement of drilling operations at the designated drilling location of such well.

(iv) Such well is drilled at least 466 ft. from any drilling or producible well.

(v) Such well is drilled at least 330 ft. from any lease line, property line, or subdivision line which separates unconsolidated property interests, and

(vi) Material required to drill, complete or provide additions to such well is on hand and available for such use or is to be obtained without the use of priorities assistance.

2. As to any oil well which is drilled to a depth of more than 2,500 ft.:

(i) Such well is drilled on a drilling unit of not less than 20 surface acres.

(ii) The proposed drilling unit upon which such well is located consists entirely of acreage which is not attributable to any well other than such well. (The acreage attributable to wells offsetting the proposed drilling unit shall be determined by assigning to such wells an acreage equivalent to that in the existing well density or drilling pattern contiguous to such wells. No portion of a drilling unit shall fall within 330 ft. of an existing well.)

(iii) All separate property interests in the proposed drilling unit shall have been consolidated prior to the actual commencement of drilling operations at the designated drilling location of such well.

(iv) Such well is drilled at least 900 ft. from any drilling or producible well.

(v) Such well is drilled at least 330 ft. from any lease line, property line or subdivision line which separates unconsolidated property interests, and

(vi) Material required to drill, complete or provide additions to such well is on hand and available for such use or is to be obtained without the use of priorities assistance.

(C) Information statement. Upon the completion of any well pursuant to this supplementary order, the operator shall file with the district director, Office of Petroleum Coordinator, Suite 1336, 120 South La Salle Street, Chicago, Ill., a statement containing the following information:

The field in which such well is located, a plat showing the specific location of such well, the depth of such well, the sand to which such well is drilled, the initial production of such well, and the date of the completion of such well.

(D) Effective date. This order shall take effect on the date of issuance and shall continue in effect until January 1, 1943.

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Washouts Cause Slight Decline in Rail Shipments

WASHINGTON, D. C.—A total of 817,980 bbl. daily of petroleum and petroleum products were shipped to the Atlantic seaboard by rail during the week ended August 22, it was announced last week by the Office of Petroleum Coordinator for War.

This represents a decrease of 12,840 bbl. daily from the record volume moved during the week ended August 15, when car loadings averaged 830,820 bbl. per day. The decrease was due, in part, to floods which washed out a number of railroad bridges.

In making the daily shipments, 31 companies loaded 27,266 cars. Including those cars that were on the way back west for reloading, it is estimated that about 70,000 tank cars are engaged now in the East Coast service.

On the basis of an average of 210 bbl. per car, the 27,266 loaded cars carried the equivalent of 5,725,860 bbl. of petroleum and petroleum products during the week.

Petroleum Aromatics Placed Under Complete Allocation

WASHINGTON, D. C.—Complete allocation of aromatic petroleum solvents other than benzene and toluene which are covered by other priority orders has been ordered by the War Production Board, effective October 1. Consumers requiring less than 60 gal. of aromatic petroleum solvents per month are exempt from the order.

Between now and effective date of complete allocation, deliveries of aromatic petroleum solvents are limited to preference ratings of A-2 or higher.

Pacific Coast Oil Industry's Salvage Drive Expands

By L. P. STOCKMAN

LOS ANGELES, Calif.—A substantial expansion of the salvage campaign within the Pacific Coast oil industry is being planned, although L. M. Dreves, assistant regional director, Industrial Salvage Section, War Production Board, is well pleased with the progress reported during the past few weeks.

So far efforts have been concentrated on equipment that can no longer be used. In the near future steps will be taken to demolish existing nonessential structures and to take any other action necessary to substantially increase the amount of scrap metal available. No action has been started to dismantle steel derricks in California fields but this possibility is being considered. Any general program of demolition and salvaging of steel derricks in California fields probably will be postponed for several months and may never reach fruition. The scrap resulting from the present drive may determine how soon it will be necessary to demand the metal in steel derricks.

Collection of iron and steel scrap up to the present time approximates 12,250 tons. This collection only dates back to June 1 and includes salvage up to the middle of August. Prior to June 1, no record was kept of the amount of scrap metal salvaged by the California industry. Most of the major companies have turned in all readily available scrap metal but returns from independent operators have been below expectations. Plans are under way, however, to route trucks in such a way that collection of metals from independent operators may be enhanced. The chief stumbling block so far has been inability to collect the salvage of many operators because they do not have a full truck load. The present objective is 50,000 tons from the California oil industry within the next 3 months and after that it will be necessary to take such other action as may be required. Much depends upon what volume the general public and other industries turn in for salvage because if the total falls below the necessary amount other actions will be taken.

Organized in May

The California oil industry salvage committee was organized in May 1942, under the direction of M. R. Singleton, salvage director for the oil industry, Bureau of Industrial Conservation, responsive to the policy of the War Production Board. The primary purpose was to get all scrap material useful for war purposes from oil fields, refineries, shops and other establishments. Considerable salvage work was done by major companies prior to the organization of this committee. The committee was organized with representatives from various districts of the state and then district chairmen were appointed. These various groups cooperated in turn with Lloyd Williamson as vice chairman and with Paul Shoup, former president of Southern Pacific Railroad, and general chairman of the committee. The field chairmen contacted all operators and pointed out the nature of the scrap needs, points of shipment and responsible scrap dealers.

In organizing the California salvage committee, every attempt was made to secure representative groups from all branches of the industry. Membership of the committee includes Messrs. Shoup and Williamson; A. C. Rubel, vice president, Union Oil Co.; W. C. Whaley, vice president, Barnsdall Oil Co.; W. C. Dayhuff, president, California Natural Gasoline Association; D. B. O'Neill, general manager, Independent Refiners' Association of California; Rush Blodget, executive vice president, Oil Producers Agency; Richard Fenton, executive vice president, California Stripper Well Association; Dana Hogan, president, San Joaquin Valley Oil Producers Association; F. E. Foster, managing director, California Oil and Gas Association; J. A. Smith, president, Independent Producers and Consumers Association; George Suman, vice president, Tide Water Associated Oil Co.; Ralph B. Lloyd, president, Lloyd Corp.; Martin Meers, Tide Water Associated Oil Co.; George Trembley, vice president, Howard Supply Co.; L. L. Aubert, general manager, Bankline Oil Co.; W. H. Morgan, vice president, R. R. Bush Oil Co.; H. F. Owens, president, Berry Oil Co.; E. E. Pyles, chairman, OPC District 5 production committee; B. E. Devere, president, Pathfinder Petroleum Co.; C. A. Johnson, president, Holly Oil Co.; L. A. Cranson, vice president, Honolulu Oil Corp.; Floyd Bryant, assistant to the president, Standard Oil Co. of California; and J. G. Kelley, treasurer; Hillman Kelley, Inc. Members of this committee were assigned one or more fields or industry branches as chairmen of volunteer groups to segregate and collect salvage or report the amount available in each district.

Committee's Recommendations

The segregation and collection of iron and steel scrap is being carried on throughout the state but maximum responses have not yet been made. In outlining the oil-industry program, the committee recommended: (1) That in each district a plan be followed to insure collection of all waste materials, particularly metals and rubber; (2) encourage demolishment of obsolete and idle facilities including refineries and natural-gasoline plants, abandoned pipe lines and producing equipment, making preparations and carrying out dismantling wherever possible; (3) facilitate economic action in any displacement, by giving all assistance possible, securing information on what second-hand equipment may be needed by some other company at prices better than dealers pay; (4) arrange meetings in every district in the state, one for each month for the 4 months of the drive or until the program ends; (5) explain thoroughly to the entire petroleum industry how scrap should be moved to dealers and their part in the general program.

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Decline of Mexican Oil Yield Indicates Need of New Study

PRODUCTION of 2,792,471 bbl. of crude oil in July was reported last week by Petroleos Mexicanos, the government oil agency, a daily average of 90,079 bbl. The rate of production in July compares with total output of 3,124,532 bbl. in June, a daily yield of 104,151 bbl.

The decline was most pronounced in the South Tampico section where output declined in July to 251,072 bbl., compared with 619,911 bbl. from that district in June. Production from the other three areas was approximately unchanged.

Production from operations of Petroleos Mexicanos in the 2 months are shown by districts:

	July	June
North Tampico	269,023	246,002
South Tampico	251,072	619,911
Poza Rica	1,836,353	1,810,979
Isthmus region	436,023	447,640
Total	2,792,471	3,124,532

Petroleos Mexicanos' production in July 1941 totaled 3,839,558 bbl., a daily average rate of 123,857 bbl., or 43,878 bbl. higher than the current output.

The substantial decline in current production is more significant in view of last week's announcement that a special mission from the United States, headed by E. DeGolyer, assistant deputy petroleum coordinator, is now en route to Mexico for a study of the equipment and operatins needed to rehabilitate the Mexican oil industry. Personnel of the United States mission includes producing and refining technicians, indicating that all phases of the industry are to be investigated.

The U. S. Government arranged for the special petroleum mission on invitation of the Mexican officials.

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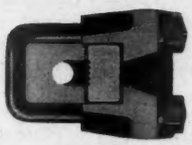
Oil Burner Institute To Expand Activities

NEW YORK.—Members of the Oil Burner Institute will be asked to approve a change in the organization's name to the Oil-Heat Institute of America at the semiannual meeting in New York, October 13.

Plans are to expand the organization to include in its membership oil-burner manufacturers, national or regional fuel-oil marketers, incorporated dealer groups, accessory manufacturers and honorary members.

Alike in Quality



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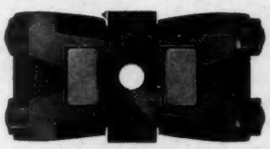

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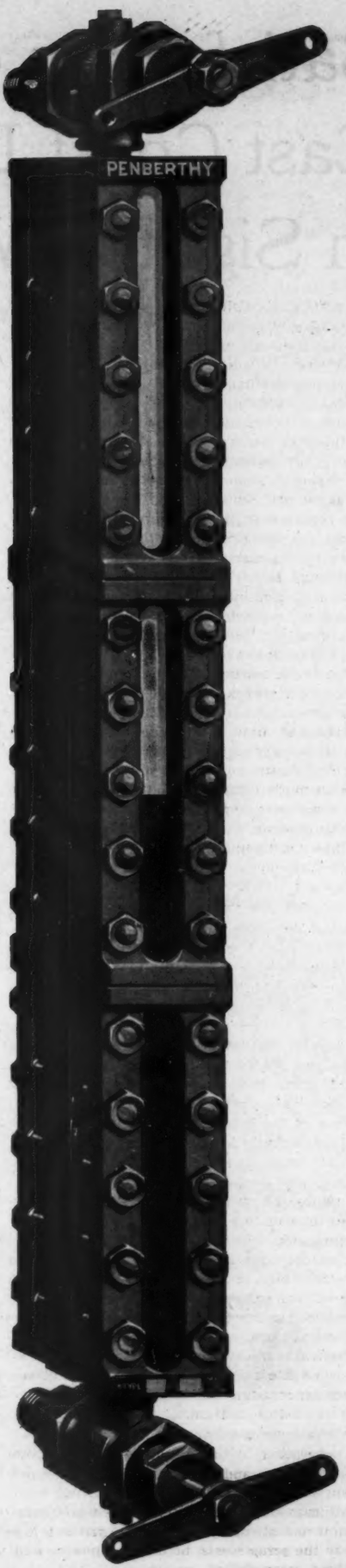

PENBERTHY INJECTOR CO.

DETROIT, MICHIGAN • Canadian Plant; Windsor, Ontario

PENBERTHY PRODUCTS

Satisfaction of Minimum East Coast Demand Is In Sight, PIWC Hears

By HENRY D. RALPH

WASHINGTON, D. C.—Anticipated deliveries of petroleum products to District 1 during the next 7 months will barely meet estimated minimum rationed demand and achievement of even this will require further cooperative action by the entire industry, the committee on petroleum economics reported to the Petroleum Industry War Council September 1.

The report was more comprehensive than in the past and contained estimates of supplies, demand, production and refinery runs from August 1942 through March 1943 for Districts 1, 2 and 3.

Total deliveries into District 1 of all crude and products are estimated in barrels per day as follows: August, 1,272,000; September, 1,388,000; October, 1,291,000; November, 1,285,000; December, 1,250,000; first quarter 1943, 1,287,000; average 8 months ended March, 1,295,000. District 1 production is estimated to average 79,000 bbl. of crude and 8,000 bbl. natural gasoline daily and shipments to other districts, chiefly lubes, at 18,000 bbl. during 8-month period.

Total essential daily demand all products District 1 estimated at: August, 1,048,000; September, 1,114,000; October, 1,192,000; November, 1,336,000; December, 1,436,000; first quarter, 1,456,000; average. 1,315,000 bbl.

Slight Margin Provided

Considering changes in stock levels, total supplies in District 1 are estimated to cover essential demand requirements with a margin of 54,000 bbl. per day addition, which is equivalent to 4 per cent of essential demand and only one-third of so-called intermediate demand. It makes no provision for 100,000 bbl. daily of intermediate demand and 270,000 bbl. normal but nonessential demand. Committee said this negligible margin of safety requires most effective utilization of all functions of the industry but, if necessary steps are taken promptly to put its program into effect, sufficient supplies will be available to meet essential East Coast demand this winter.

To realize this program, the committee recommended immediate action as follows:

1. Maximum utilization of all available transportation facilities in most effective manner, a particularly high degree of industry cooperation in use of tank-car terminal and loading facilities and trainload shipments and additional Ohio River transfer and storage facilities.

2. Marked readjustment of refinery yields to increase distillate and residual fuel oil at expense of gasoline, meaning maximum utilization of refinery flexibility and calling for prompt action on necessary compensation.

3. Cooperation by state regulatory bodies and Compact Commission to make possible crude production schedules for the three districts.

4. Adjustment of refining operations and transportation so that stocks of crude and products will conform to schedules which take into account variations in seasonal requirements and work down to seasonally adjusted minimum stocks.

5. Control of use of all products in District 1 so as not to exceed available supplies of each. Failure to hold gasoline consumption to estimates would mean shortage of fuel oil.

6. Coordination between buyer and seller activities so that supplies offered in Districts 2 and 3 may promptly be moved into District 1 in such quantities and from such locations as to utilize most effectively all available transportation.

Highspots in the report included the following:

In 8 weeks since last report total stocks of crude and products in District 1 have increased 6,600,000 bbl., which is only 75 per cent of increase projected then as needed to provide required minimum of fuel-oil stocks.

Restrictions on Deliveries

Program calls for minimum use of petroleum products by consumers in addition to restrictions on delivery and use. No artificial restrictions on consumption are assumed in Districts 2 and 3 beyond voluntary curtailment. Gasoline demand in District 2 is estimated to decline by December to 25 per cent of last year's requirements. In District 3, increases in aviation gasoline demand are expected to offset declines in motor gasoline so there will be an actual over-all gain. In Districts 2 and 3 together residual fuel oil is expected to increase 19 per cent over last year but kerosene and distillate fuel will reflect only nominal changes.

Figures on estimated demand in District 1 assume restrictions distinctly more drastic in Districts 2 and 3 than brought about by voluntary reductions resulting from rubber shortage.

Indicated supplies of gasoline in District 1 are 460,000 bbl. daily in August and 435,000 bbl. average for 8 months whereas actual shipments of gasoline out of refineries and major terminals in District 1 during the interim card-rationing peperiod May 15 to July 22 averaged 453,000 bbl. Under coupon rationing from July 22 to August 22, weighted average deliveries were 511,000 bbl. The committee said this may be due to building up dealer stocks after removal of L-70 restrictions, but if consumption does not drop to its estimates of supplies the value of ration coupons must be reduced.

In estimating essential demand committee assumed reductions in District 1 of 30 per cent in distillate oils used for heating; 5 per cent below normal in distillate fuel oil for nonheating purposes, or a 25 per cent over-all reduction; 25 per cent reduction in kerosene and range oil; and 20 per cent in residual fuel oil.

Estimates of total deliveries into District 1 are lower than previously forecast owing to lower assumed tanker movement. Tank-car deliveries are estimated at 970,000 bbl. daily in September but to decline thereafter due to slowup caused by heavier traffic and winter conditions. Pipeline deliveries assume completion of all current projects. Defense Pipe Line is estimated to start delivering 150,000 bbl. daily to Illinois January 1 and to increase to 300,000 by March 1. Net effect will be to increase deliveries to East Coast by about one-third of deliveries to Illinois. Line is assumed to operate 40 per cent on heating oils and 60 per cent on crude.

The forecast does not include full utilization of pipe lines east and south from Buffalo and the committee called for steps to assure greater deliveries at that terminal. The report recommended construction of additional barge unloading and tank-car loading facilities in the vicinity of Pittsburgh since the Ohio River barge deliveries by the first of the year are expected to be three times the present volume.

Production Estimates

The committee's production estimates are: District 1, September 77,000 bbl. daily, third quarter 1942, 80,000; first quarter 1943, 80,000. District 2, September, 1,055,000 bbl.; third quarter 1,038,000; first quarter, 1943, 1,005,000 bbl. District 3, September 1,805,000 bbl.; third quarter, 1,870,000, first quarter, 1,890,000 bbl. In addition to this increase in production in District 3, the committee forecasts reductions in stocks there averaging 65,000 bbl. per day during the next 7 months.

The report included detailed estimates of refinery yields by districts. Weighted average for the three districts is: Actual 1941, gasoline, 46 per cent, kerosene 6 per cent, distillate fuel oil 13.6, residual fuel oil 21.2; actual June 1942, gasoline 39.9, kerosene 5.6, distillate 15.4, residual 22.8 per cent. The forecast average from August to March is: Gasoline 37.1 per cent, kerosene 5.8, distillate 16.3, residual 26.4 per cent on crude processed.

To accomplish this program about 270,000 bbl. daily of gasoline must, in effect, be degraded to lower valued products, principally residual fuel oil, as compared with average operations for 1941. On basis of differentials in current ceiling prices, this means reductions in refinery income of approximately $350,000 per day. The committee called for prompt action for compensation.

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Depletion Allowance Retained In Senate Committee Report

WASHINGTON, D. C.—The Senate finance committee September 1 voted 14 to 7 to retain the depletion allowance of 27.5 per cent for oil-well operators and mining enterprises in the general revenue bill which now goes before Congress.

In continuing the depletion allowance, the Senate committee rejected proposals of the Treasury Department and accepted declarations of oil-industry leaders that it constitutes a reasonable concession for the hazards of mineral exploration. In opposing the Treasury Department's stand, oil industry spokesmen declared that elimination of the allowance would interfere seriously with the exploratory work now conceded both by government and private interests to be essential to the war program.

Hugoton Field Drilling Halted Except on WPB Authority

WASHINGTON, D. C.—On recommendation of OPC the War Production Board September 1 ordered a stop to further drilling of gas wells in the Hugoton field in Kansas and Oklahoma except on specific authority. This halt was ordered because more than 20 wells in the field are not yet connected to pipe lines and is to prevent steel being used in drilling additional nonproducing wells. Order is M-68-6.

Senate Committee Hears Pleas For Higher Crude-Oil Prices

MIDLAND, Tex.—Repeated declarations that higher crude-oil prices will precipitate the desired increase in exploratory drilling were spread on the record here last week of the Senate subcommittee on public lands.

Western hearings of the subcommittee which opened in Casper, Wyo., 2 weeks ago were concluded here August 28. More testimony will be taken by the committee at a later date in Washington, D. C., Sen. Joseph C. O'Mahoney of Wyoming, chairman, advised West Texas oil men.

Ernest O. Thompson, Austin, chairman of the Texas Railroad Commission, and Beauford Jester, new commissioner, were among the witnesses. Col. Thompson proposed an advance of 25 cents per barrel in the postings for crude oil and recommended that regulation of production should be the exclusive function of states to avoid implications of "favoritism."

Commissioner Asks Noninterference

The Railroad Commission chairman who occupied the witness stand for more than 2 hours also argued that state regulatory bodies should be permitted to determine fields from which petroleum needed in the war program is to be produced. He contended that the Office of Petroleum Coordinator should not issue instructions by telegram to state commissions dictating which areas are to produce certain grades of oil.

"The present price is not getting the job done," declared Colonel Thompson. "Raise the price of crude and you'll get exploration and a free play of economics and we will retain our reserves.

"In West Texas," the Texas commissioner continued, "we've hardly tapped the oil resources. Wildcatters are anxious to go ahead. They are waiting for only a 25-cent price increase."

John I. Moore, Midland geologist and independent producer, urged the committee to use its influence in lifting the price ceiling on crude oil at least 25 cents per barrel.

H. P. Nichols, Tyler, independent producer in East Texas, argued that current prices will not justify the rehabilitation of wells which require remedial work in order to recover reserves that otherwise will be left below ground indefinitely. He also demanded that "selective buying be stopped immediately."

Neville G. Penrose, Fort Worth, Tex., producer, asked the Senate subcommittee to correct the prevailing incorrect impression in Washington that all oil men are rich, adding "it isn't so." Lloyd Noble, Tulsa, president of the Noble Drilling Co., outlined the difficulty of maintaining adequate drilling capacity with the siphoning action of more active war industries and selective service on skilled manpower of the oil business.

Watson B. Joyce, chief of the crude-oil price section, Office of Price Administration, one of the several bureau representatives from Washington sitting with the Senate subcommittee, questioned Colonel Thompson about aspects of passing the market advance proposed by the Texan on to the consuming public.

William B. Heroy, director of petroleum reserves, OPC, inquired about the success of higher allowables assigned new discoveries in Texas. Mr. Heroy asserted that economy needs may dictate consideration of new means of doing things under the war program. He declared that petroleum reserves must be maintained behind the Army and Navy and that oil requirements must be produced with minimum waste and as economically as possible. Mr. Heroy said that only 14 per cent of the nation's steel-producing capacity is available for American industries.

Russell B. Brown, general counsel of the Independent Petroleum Association of America, told the committee that exploratory drilling and petroleum reserves must be maintained and that it was up to the industry and government agencies to work out a program that will not fall short of maximum requirements.

At the Casper hearing, several Rocky Mountain oil operators supported the bill by Senator O'Mahoney now pending action in Congress providing a flat royalty payment of 12.5 per cent on minerals produced from federal lands. Later, at Artesia, N. M., where the committee conducted another hearing on the public-land question, additional support was given the flat-royalty proposal to replace the present sliding-scale system.

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DEATHS

WILLIAM BLISS PINE, 64, Okmulgee, Okla., president, Producers & Manufacturers Gas Co., died August 25 of heart trouble at his desk in Okmulgee in the midst of plans for a strenuous campaign to return to the office of United States senator as Republican nominee. He was born in Illinois, and moved to Okmulgee in 1909. Mr. Pine is reported to have declined an offer from Sinclair Oil Co. of $5,000,000 in 1930 for his oil holdings. His widow and a son survive.

JOHN C. ROBISIN, 71, former oil-lease superintendent at Franklin, Pa., died in Franklin last week. He had been employed for 37 years by Grimm Oil Co., until his retirement 3 years ago. Five daughters and three sons survive.

E. O. BARTLETT, retired Tulsa oil man, and one of the organizers of Barnsdall Oil Co., died last week at Chautauqua, N. Y., following a stroke suffered while vacationing at the New York resort. Mr. Bartlett had lived in Tulsa since 1926, when the Barnsdall offices were removed here. He entered the oil business in 1892 with T. N. Barnsdall, an independent producer in Bradford, Pa. He helped organize Barnsdall Oil Co. in 1916, and became vice president and treasurer. He retired in 1932. A son and daughter survive, in addition to the widow.

JAMES M. FRASER, 66, who had been identified with the oil industry almost his entire life at Bradford, Pa., died last week of a heart attack at his home in Rixford, Pa. He had been afflicted with heart trouble for a year. His widow, a son and a daughter survive.

ELMER S. WOOD, 68, Oklahoma City, Okla., president of Penn Oil Corp., died at Poteau, Okla., last week, after a brief illness. He had been active in the oil business in eastern Oklahoma. Survivors include his widow and a daughter.

ARTHUR K. MILLER, 74, for 25 years an employe of Mid-Continent Petroleum Corp., died at his home in Tulsa last week, after a 3-year illness. His widow and a daughter are among the survivors.

GEORGE W. BRINKLEY, 50, district manager of Oklahoma Natural Gas Co., died at his home in Ardmore, Okla., last week, death being attributed to a heart ailment. Mr. Brinkley joined O.N.G. in 1915. Prior to this connection he spent 2 years with Kansas Natural Gas Co. on construction work, and 2 years with Fredonia Natural Gas Co. His widow survives.

FRANK W. FINLEY, 73, president, Victor Oil Co. and National Products Co., Pittsburgh, Pa., and who had been active in oil ventures over western Pennsylvania, died at his apartment last week, apparently from a heart attack.

HARRY RALSTON DECKER, 79, died in a Houston, Tex., hospital August 28. A native of Pittsburgh, Pa., and an oil operator at Bradford, Pa., Mr. Decker came to the Gulf Coast district in 1901 following the discovery of the Spindletop field, and is credited with having developed several types of drilling equipment which are in use in the Gulf Coast at the present time. Mr. Decker made a study of drilling and producing methods, and during 1903 and 1915 he patented 18 types of drilling equipment.

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Houston A.P.I. Will Hear Talk on Protection of Property

George Sawtelle, president, Texas-Mid-Continent Oil & Gas Association, will address the next meeting of the Houston chapter of the American Petroleum Institute on the subject of "Wartime Protection of Oil Fields," at the Houston Club, September 9, 1942. Dinner will be served at 6:30 p.m. Mr. Sawtelle will discuss work done to date on the defense of oil fields in this area and plans for the future. He will also talk on professional fire fighting. Also as a part of the program, a moving picture on aircraft manufacturing by Wright Aeronautical Corp., entitled "Wright Builds for Air Supremacy," will be shown. The annual scholarship award of $100 by the Houston chapter to an outstanding junior Rice Institute engineering student will be presented at this meeting.

Joseph A. Fanelli Becomes Special Assistant to Davies

WASHINGTON, D. C.—Joseph A. Fanelli, of New York City, has been appointed special assistant to Ralph K. Davies, deputy oil coordinator.

Mr. Fanelli resigned his post as chairman of the Board of Immigration Appeals, Department of Justice, to join OPC.

In 1935, Mr. Fanelli for a short time was consulting attorney with the Tennessee Valley Authority. In September 1935 he joined the Securities and Exchange Commission as an attorney. Two years later he was appointed to the staff of the Office of Solicitor General, Department of Justice.

From 1938 to April 1941 he was assistant general counsel of the Railroad Retirement Board. He was chairman of the Board of Immigration Appeals from April 1941 until he was appointed special assistant to Mr. Davies.

Dowell Testing Thiokol Retreads

Dowell Incorporated, with headquarters in Tulsa, have received several sets of tires which have been retreaded with Thiokol, a product of Thiokol Corp. The "elastic plastic" material is manufactured by Dow Chemical Co., of which Dowell Incorporated is a subsidiary.

The retreaded tires will be placed in service in several areas of the Southwest in connection with the company's oil-well chemical service. The tires, which were retreaded with Thiokol, had previously been used in the field service of Dowell Incorporated. The arrangement with Dowell is part of a nation-wide test of the service obtained with Thiokol as retread material for tires.

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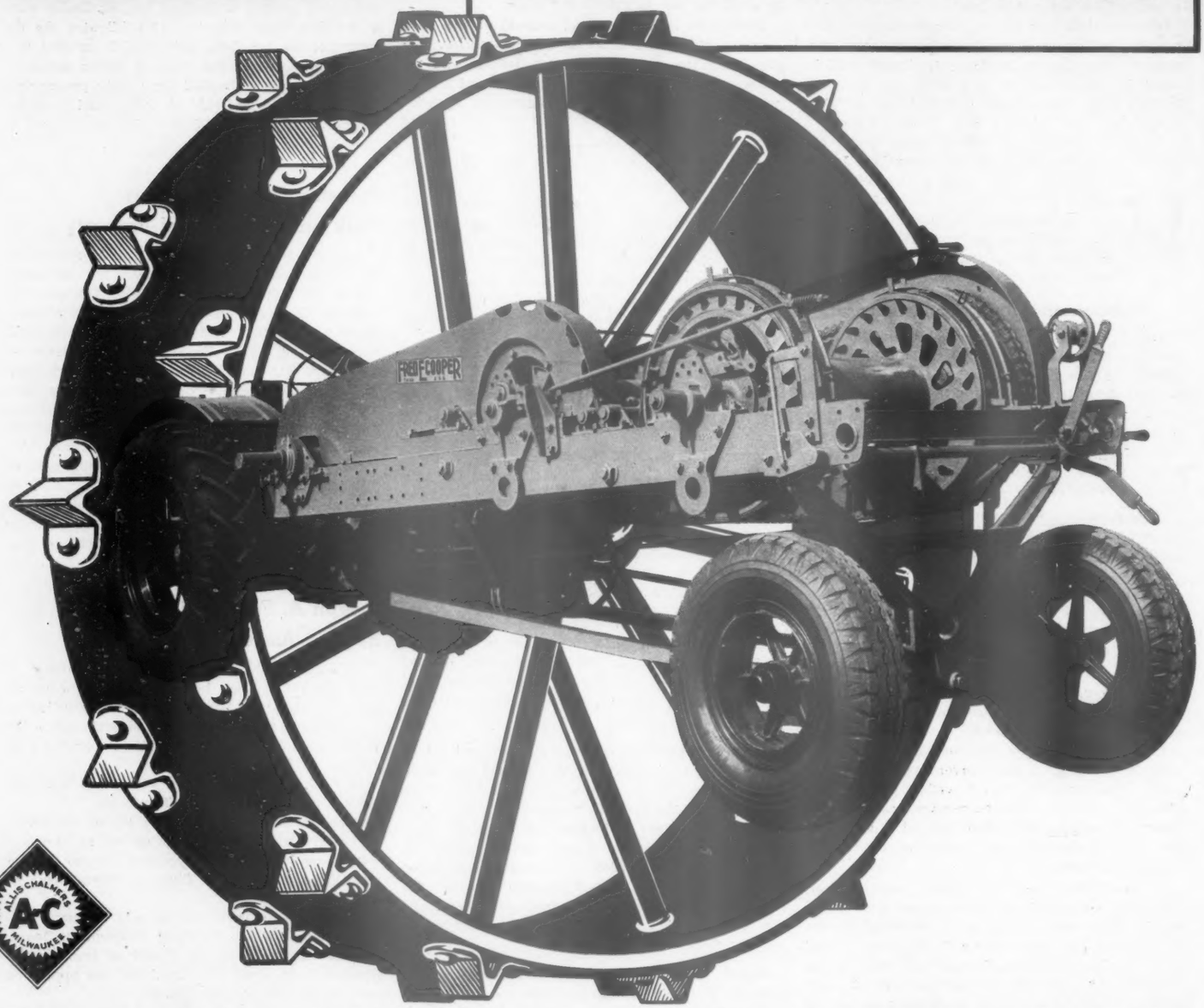

So long as rubber tires are available for well servicing equipment—rubber tires *will be* available for ALLIS-CHALMERS WINCH TRACTORS. As yet no one knows definitely how the situation on rubber, substitutes or synthetics will turn out. But if the supplies become such, that tires are no longer available—*Allis-Chalmers Wheel Type Winch Tractors can go right on servicing your wells.*

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Write For Details

Panoramic view of the Turner Valley field, Alberta, chiefly responsible for Canada's increasing production

Work Outside Turner Valley Aids Canadian Oil Outlook

By J. L. IRWIN
Statistician, Department of Lands and Mines, Government of Province of Alberta

THE continuance of Alberta's steady increase in oil production, so noticeable throughout recent years, was maintained in the first half of 1942. The figures in the table below show an increase of 363,066 bbl. for this half year.

The total of 5,144,462 bbl. produced for the half year consists of 5,090,929 bbl. from Turner Valley and 53,533 bbl. from other Alberta fields. An itemized statement covering the latter is included later in this review. Though small in comparison with the totals for the valley, production from other areas in the province for the first half of the current year shows, nevertheless, a marked increase in a comparison with the same period for 1941.

ALBERTA OIL PRODUCTION

(Quantities in barrels)

	1941	1942	Inc.	Dly. ave. 1941	Dly. ave. 1942
January	787,469	862,284	74,815	25,427	27,815
February	722,631	833,532	110,921	25,808	29,770
March	825,006	908,463	73,451	29,306	26,911
April	806,865	832,261	25,396	27,742	26,896
May	827,102	876,732	49,630	26,681	28,282
June	802,323	831,190	28,867	26,744	27,706
	4,781,396	5,144,462	363,066	26,127	27,959

At the close of the half year there were 215 producing oil wells in the province, 190 in Turner Valley and 25 in other fields.

Among the daily production allowables, given by the Conservation Board covering Turner Valley wells for July, those in classes from 400 to over 800 bbl. per day numbered 13 and were as follows:

	Barrels per day
3 Major	840
12 Foothills Oil & Gas	724
2 Atlas British Dominion	699
2 Home Millarville	639
2 Major	623
11 Home Millarville	618
7 Home Millarville	538
1 Ace Royalties	538
2 Alberta Oil Incomes	518
1 Miracle Royalties	453
6 Northwest Hudson's Bay	453
1 Home Millarville	420
9 Major	*400

*Temporary allowable pending further production data.

Four of those major producers, 12 Foothills Oil & Gas, 2 Atlas British Dominion, 11 Home Millarville, and 9 Major, came into production during the half year under review. The remainder came in in 1941 with the exception of 1 Home Millarville and 2 Alberta Oil Incomes, completed towards the close of 1940, and 2 Home Millarville, which dates its completion back to January 8, 1939. The 2 Atlas British Dominion is the most northerly well of the Valley and 6 Northwest Hudson's Bay the most southerly. All wells shown in this list of major producers are in the north end of the field excepting, of course, 6 Northwest Hudson's Bay.

Deserving of special mention is 2 Home Millarville, which, after a production period of over 3 years, is still around the top, coming fourth in importance at the end of the present half year out of a list of 190 producing wells. It is a remarkable performance and establishes a record for steadiness and persistency, a characteristic for which oil wells, in whatever field they may be producing, are not always noted.

Among the smaller producers of the valley, 1 Model, some 2 miles south of 2 Home Millarville, should be mentioned for its long and steady production. It has produced now for a period of over 12 years, presented its owners with a total production during that time in excess of half a million barrels, and was given an allowable of 124 bbl. a day for July in comparison with 72 bbl. a day in April of last year.

A third mention should be that of 6 Northwest Hudson's Bay, the most southerly well of the valley. Though not up to its original production mark, last September, it has, nevertheless, maintained its position among the first dozen of major producers since that date. The 8 Northwest Hudson's Bay in the legal subdivision immediately south of No. 6—a quarter mile distant—was drilling in the Belly River formation at a depth of 3,814 ft. at the close of the half year. It is indeed hoped that a new southerly marker among Turner Valley's producers may result from its completion.

Production From Other Alberta Fields

Production from other Alberta fields for the half year totaled 53,533 bbl. Nine fields contributed to this total of which Vermilion proved to be far the greatest producer. The list is as follows:

	Bbl.
Vermilion	25,206
Wainwright	6,701
Taber	5,348
Red Coulee	5,172
Princess	4,370
Tilley	3,580
Dina	2,400
Del Bonita	756
Total	53,533

The Vermilion Field

It will be noted from the above statement that the Vermilion field is quickly growing into an area of importance.

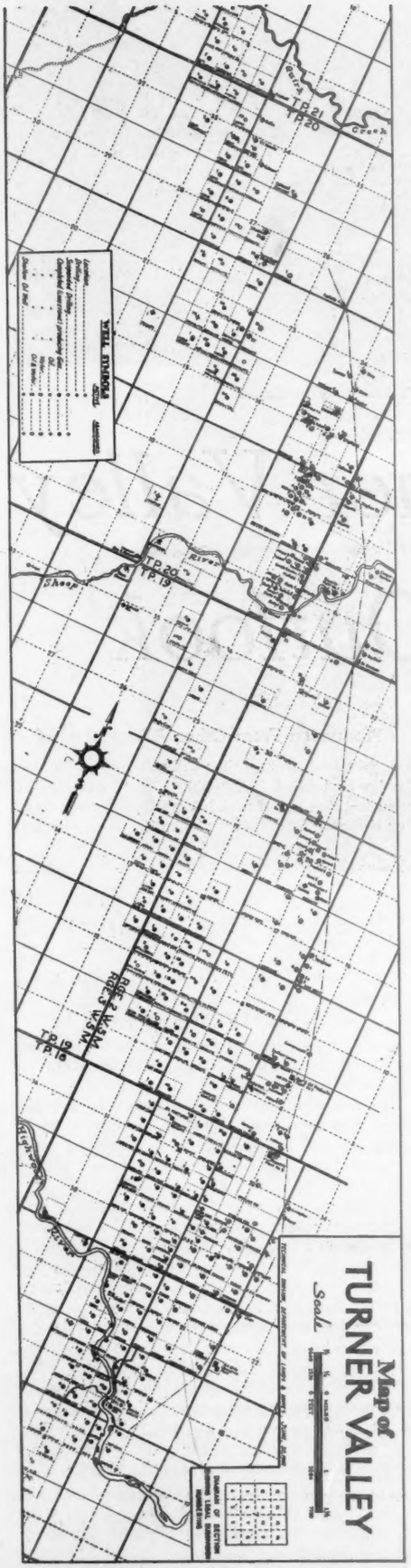
The new field has much to attract the interest of not only petroleum engineers, but also of every citizen of the province at such a time as this. There are many reasons to warrant such attraction.

Among them are the facts that the field produces an excellent quality of fuel oil of a gravity from 14° to 22° A.P.I., and that the oil is of a classification which meets with the oil-fuel demands of the railways, which, it is stated, "have reported its use in its locomotives highly satisfactory, in fact the best we have used yet."

There are other reasons. The oil is found in the Lower Cretaceous formation at depths of from 1,600 to 1,900 ft. This means shallow and therefore speedy drilling—at costs, in some instances, as low as an approximate $12,000 per well. Though the production from many wells has to be pumped, some have been brought in flowing.

Added to these advantages, Vermilion now has its own plant to condition the oil, coupled with an insistent and established market—factors so much needed in the past.

The area of Vermilion-Wainwright-Dina-Lloydminster is now making a valuable contribution in the matter of oil production towards Alberta's war effort. There is room for a great number



Main portion of the Turner Valley field which now contains nearly 200 producing wells. The field is chiefly responsible for an increase of 363,066 bbl. in production for the first 6 months

of wells in the field, the products from which could add very materially to the province's annual production totals, and become noticeable even in the current year.

This prairie oil area, some 100 miles to the east of Edmonton, has been a long time coming into its own. Present indications would seem to point to the encouraging fact that at last development on a major scale has started, and that it will be continued.

The Ram River Field

About the middle of June officials of the Ram River Oils, Ltd., issued a report on their No. 2 well of a good showing of oil at around 4,300 ft. in the Devonian lime with evidence of a porous zone extending for about 75 ft.

It will be remembered that their No. 1 well—some 100 miles straight west of Red Deer, in the foothills—which was spudded in on October 20, 1938, was abandoned the following July as result of encountering a major fault.

On May 17, 1940, the No. 2 well was spudded in some 12 miles to the southeast of No. 1. Operations were carried out with a diamond drill and the well started near the top of the Devonian lime.

Oil showings were first noticeable at 4,250 ft. The drilling was continued to 4,325 ft. with signs of the porosity being good. Following this drilling became harder, which indicated that the porous zone was passed and operations were suspended for a test, bottom of 4,340 ft. having been reached.

Samples brought to Calgary showed a dark green, sulfur-free oil of probably 35° A.P.I. which contained lubricating characteristics—a particularly valuable oil just now.

Road conditions, resulting from bad weather at the time of the strike, made traveling difficult. A careful test, however, will be made, though it will probably be some time before results are known.

Favorable results since the suspension of drilling at No. 2 have been also reported. Five days after the well had been closed in, it was stated that pressure on the casing valves had built up to 125 lb. and was increasing at the rate of about 25 lb. a day. This continued up to 165 lb. at which figure it was said to have remained steady. Reports covering this general information have not yet, however, reached the Government, and it will of course be impossible to issue anything of an official nature until after the tests are completed.

No. 1 Ram River well, though not off structure, encountered a major fault. With the courage of their convictions, as a result of information obtained, the officials continued to be persistent, and in spite of the great difficulties of that rough and wild country spudded in their No. 2.

Such effort is deserving of real success. It looks this time as if they may secure it. Meanwhile the oil world of Alberta is wishing them good luck.

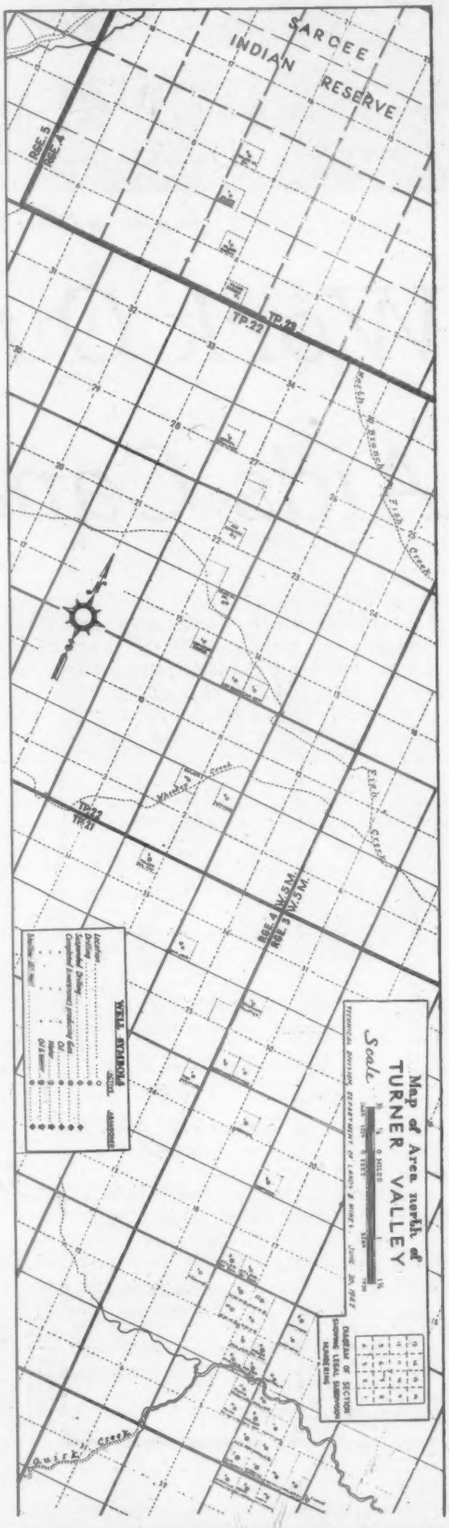
Conclusion

These are days in which the potentialities of Alberta oil seem suddenly to have become realized, and development of new fields is being pushed forward with a new emphasis.

In spite of the disastrous fire which took place some months ago at the Abasand tar sand plant on Horse River, McMurray, the difficulties of obtaining replacements in these days of priorities of steel, and the general discouragement of such a setback, the plant is now reconstructed and ready once more for operation—this time on even a greater scale than before.

With the official announcement last year of production from McMurray's tar sand, a new page was written in Alberta's oil history. By the close of 1942 it is possible that much additional progress will have been made.

Needless to say, oil is now wanted as it has never been wanted before. It represents one of the most imperative demands of these critical times. It is to be hoped that Alberta will be able to contribute in this respect on a basis which will be encouraging, and with results which will be definitely helpful.



Northern part of the Turner Valley area where operators are concentrating exploratory work. Operations cover, as the map shows, a narrow trend approximately 7 miles north of the main portion of the field

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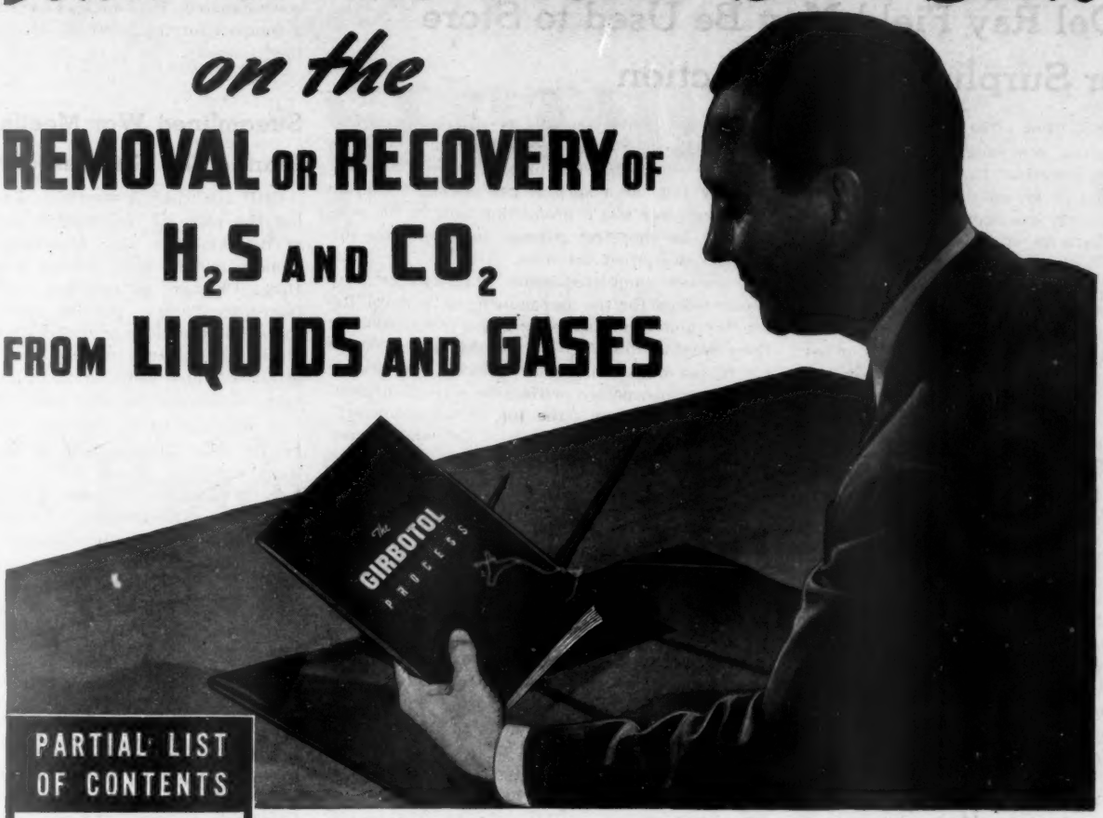

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Natural Gas News

Playa Del Ray Field May Be Used to Store Summer Surplus Gas Production

LOS ANGELES, Calif.—The increased oil-production quotas recommended for certain California fields, effective August 16, was made during the period of lowest demand for natural gas and consequently gas companies are worried over what to do with surplus production they will be called upon to handle. The Southern Counties Gas Co. last year acquired all the acreage in the Goleta gas field of Santa Barbara County and has been using this structure to balance supply and demand. During the summer, Southern Counties Gas Co. stores surplus gas and in the winter withdraws the necessary reserve to meet requirements. A plan is now under way to use the Playa Del Rey field in Los Angeles Basin in a similar way. The only difference between the two plans is that Playa Del Rey is an oil field and the storage and withdrawal of natural gas would have a direct influence on crude-oil production. It is believed, however, that a workable plan can be formulated whereby all operators and landowners would benefit by increased production. This projected plan has passed the tentative stage, although it may not be put into operation for several months owing to the necessity of arranging operating details.

There has been a shortage of natural gas in southern California during the past 2 years, but this has been corrected to some extent by the cancellation of certain commercial gas contracts during periods of surplus production. These manufacturing concerns were warned last year to install standby units operating on fuel oil and this entire group of consumers is now able to switch over with little lost time. Many of these so-called surplus gas contracts have been eliminated and hotels and other similar establishments now use fuel oil exclusively. The plan to utilize the Playa Del Rey field as a surplus gas storage reservoir in the summer and a production unit in the winter will be the first attempt to harmonize numerous diversified interests.

A survey completed some time ago by Professor Dodge for the Department of Natural Resources and other state agencies indicated that there would probably be a shortage of 16,000,000 cu. ft. per day during peak periods next winter even though capacity production was maintained and pipe lines were operating at maximum efficiency. Southern California Gas Co. has laid numerous short loops and in some areas has doubled its pipe-line capacity but still fears that during peak-demand periods it may not be able to meet requirements. This company recently joined Shell Oil Co., Dow Chemical Co. and others in a project to produce synthetic-rubber components. As a consequence, Southern Counties' standby unit maintained for natural-gas emergency loads will not be available.

The plan to use the Playa Del Rey field for gas storage should meet with approval of all operators in the field as the injection of natural gas would tend to increase production of crude oil and natural gasoline and thus increase the ultimate production of the field. It has been calculated that all necessary equipment, including sufficient compressors, is available and could be put into operation within 30 days after the plan is approved. There has been some discussion about having the Government take over operation.

Natural Gas Pipeline Lowers Rates $2,738,000 Annually

WASHINGTON, D. C.—The Federal Power Commission last week announced receipt of new rate schedules filed by the Natural Gas Pipeline Co. of America proposing natural gas wholesale rate reductions to its utility customers in Illinois, Iowa, Kansas and Nebraska of approximately $2,738,000 annually. This proposed reduction, added to the commission's "interim" rate order of July 23, 1940, upheld by the Supreme Court which lowered the company's wholesale rates $3,770,000 annually, would lessen charges to the company's utility customers approximately $6,500,000 per year.

The new rate schedules were filed on the eve of a hearing previously set for August 24, 1942, in Chicago to further investigate the wholesale rates of the company and its affiliate, Texoma Natural Gas Co. This hearing has been postponed until further order of the commission.

The principal change in the company's rates is a substantial reduction in the demand charge per 1,000 cu. ft. per month in General Rate Schedule G-1. The proposed schedules contain a two-part rate, in which the commodity charge is 7 cents per 1,000 cu. ft., for all gas used. The demand charge was lowered from $2.82 to $2.40 in a recent "standardization" filing by the company and is now further lowered to $1.46 in the new schedules. The application of this new rate results in an average "gate rate" (including demand and commodity charges) of approximately 16.6 cents per 1,000 cu. ft. at an annual load factor of 50 per cent; 13.4 cents per thousand at 75 per cent load factor; and 11.8 cents at 100 per cent load factor. The rates are for gas containing 1,000 B.t.u. per cu. ft., and provision is made for adjustments for variations in heat content.

Reductions effected by the proposed new rate schedules, when added to the rate-cut ordered by the commission, would result in total annual savings of $5,751,000 to Chicago District Pipeline Co.; $532,000 to Iowa-Illinois Gas & Electric Co.; and comparable reductions to other utility customers, with exception of Illinois Iowa Power Co. and Central Illinois Electric & Gas Co., which are not affected by the July 23, 1940, order.

Phillips' Offer on Panhandle Stock Given Favorable Report

PHILADELPHIA, Pa.—Approval of the sale of Columbia Oil & Gasoline Corp. holdings in the Panhandle Eastern Pipe Line Co. to Phillips Petroleum Co. for $10,346,826 has been recommended by the Public Utilities Division of the Securities Exchange Commission.

Phillips, the utility division favorable recommendation points out, has agreed to sell half of the 404,326 shares of Panhandle common stock it receives from Columbia to Missouri-Kansas Pipe Line Co., which now holds 42 per cent of the stock. The 202,163 shares Phillips would offer to Missouri-Kansas would give the latter corporation 67 per cent of the Panhandle Eastern shares.

The agreement between Missouri-Kansas and Phillips provides that if the voluntary plan is consummated, Panhandle Eastern will negotiate a contract for the purchase of gas from the Phillips company.

Streamlined War Meeting Planned by Gas Association

CHICAGO, Ill.—A streamlined war meeting taking the place of the regular annual convention of the American Gas Association will be held Monday and Tuesday, October 5 and 6 at La Salle Hotel, Chicago. In complete harmony with the Government's war policies, the sole purpose of the meeting will be to deal with major problems of the gas industry arising from the conflict, to effect thorough cooperation in all the war effort, and to consider postwar plans and adjustments.

In contrast to the normal 3-day program of events, only Monday will be set aside for sectional meetings. These will be restricted to problems of paramount importance in relation to the war effort. The meeting will open Monday with the session of the Natural Gas Section, which will also hold an executive dinner that evening. The luncheon period, the afternoon and the evening if desired, have been set aside for meetings of the Accounting, Industrial and Commercial Gas, Residential, and Technical sections.

Tuesday will be devoted to general sessions at which vital over-all industry problems will be clarified.

The routine business will be concentrated briefly in the opening general session, including the election of officers. The presidential address by George S. Hawley, president of the Bridgeport Gas Light Co., will set the tenor of the meeting and highlight the major points.

Of outstanding interest will be the report of the committee on war activities by Ernest R. Acker, chairman.

Limitation orders restricting the sale of gas in certain territories and for specific uses, with almost complete stoppage of the production and sale of appliances, have brought a complete about-face in gas promotional activities and untold consequences for the future. The problem of gas supply to vital war industries has placed a heavy responsibility upon the entire industry which will be reviewed in the light of providing complete support to the Government's war program and at the same time safeguarding the industry's future.

Union Sulphur Lays Line to Lake Charles

Union Sulphur Co. has begun construction of a 17-mile 16-in. gas line from the Woodbine field in Jefferson Davis Parish, Louisiana, which will furnish fuel to the magnesium plant at Lake Charles, La. The company is buying right-of-way for a 14-in. gas line from the Woodlawn field, southeast to Hayes Junction, La., and right-of-way for an 8⅝-in. line from Hayes Junction easterly to connect with the South Roanoke gas wells. This line may be extended east to connect with the South Jennings field. Tentative survey has also been made for a line from Hayes Junction to the Hayes field in Calcasieu Parish, Louisiana, but construction will depend on further development of this field's gas reserves.

ENGINEERING *and Operating* SECTION

New Practices Aid Reclaiming Of Used Oil-Field Equipment

By NEIL WILLIAMS

Oil-country machine shops are playing an important role in helping operators to salvage and reclaim their old equipment. Facilities are being provided and methods adopted that will permit handling of work which previously might have necessitated shipment to factories.

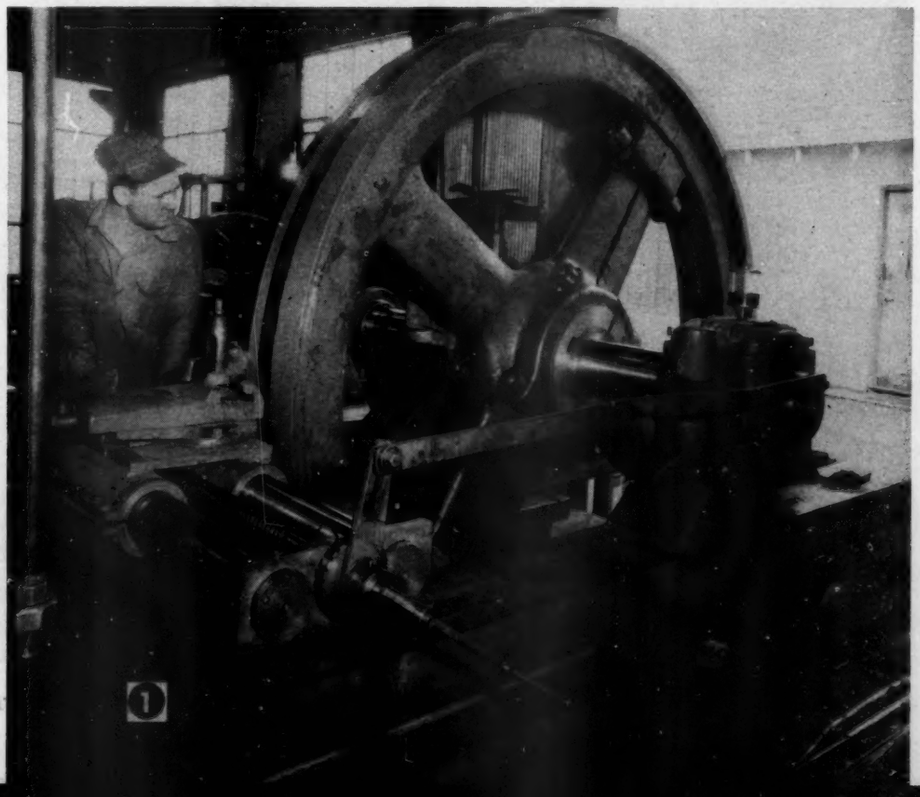
DIFFICULTIES of obtaining new equipment and replacement parts for oil-field operation are placing increasing emphasis upon salvaging and reclaiming of old equipment. In this, additional responsibilities are being placed upon machine and tool shops in the oil country not only to repair this equipment but also to rebuild and adapt it for new service. Such shops, both company owned and commercial, now are performing a particularly important function for the oil industry.

In view of this, oil-country machine shops have been equipping themselves and developing methods for handling most any kind of machine work, small or large, that might arise. Old equipment and machinery that normally might be discarded as no longer serviceable are being brought into shops for reworking. Some of this is work that heretofore only factories might have been considered capable of doing satisfactorily.

Much of this work is being made possible through developments in the art of metalizing. Building up of worn metal by metalizing is not new, but in the past the practice has been somewhat limited, due partly to the fact there has not been so much occasion to resort to the practice as now. Also in the past, due possibly to the fact that less was known about the practice, less care was followed in the operation or faulty methods or wrong metals were used, results were unsatisfactory in many cases. However, with improved processes and materials along with greater skill on the part of the operators, more general application of the art now is possible, and is being put to good use.

Not only are new uses being found for metalizing, but the practice is being found satisfactory for even heavy equipment subjected to extreme loads and wear.

Typical of some of the major oil-field-equipment jobs which commercial shops have been called upon to do recently are those shown in accompanying pictures. Pictures 1, 2, 3, and 6 show various jobs done in reclaiming and overhauling an old 180-hp. Clark gas engine. This engine, which normally might have been sent back to the factory, was completely worked over in an Oklahoma City shop. In the job, the engine was converted to forced-feed lubrication, and the speed increased to boost the horsepower from 180



These views depict some of the work being done in oil-country machine shops in working over and rebuilding large gas engines to conserve new equipment

to 230. Otherwise, the engine was modernized and made practically as good as new.

In Picture 1, the 8,000-lb. flywheel is being turned down to obtain proper balance. It has been found that flywheels after use sometimes get off balance. In this case the wheel was 65 lb. off balance. This not only causes vibration but puts a terrific strain on the main bearings. Turning down a flywheel is a particularly tedious as well as a somewhat delicate job and is not often attempted in a field shop. It requires accurate measurement of the balance, as well as care in the turning to obtain proper balance. The jig for supporting the wheel while turning was designed and built in this shop. The measuring devise and gage is set up in the lower part of the jig at the front.

New Bearing Is Poured

In Picture 2, the main bearing is being machined and grooved for forced-feed lubrication, which it did not have to begin with. Preparatory to this, the old bearing was bored out, and new babbitt bearing metal poured. This then was machined by turning to proper size, and in which the grooves were cut.

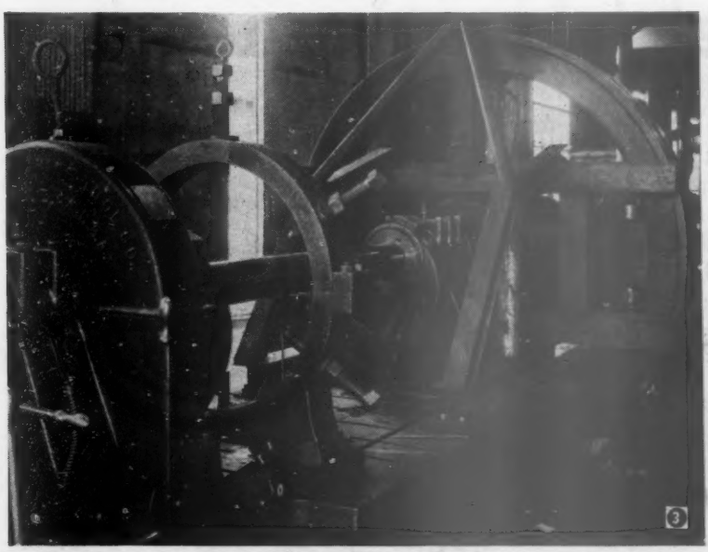
Reboring of the flywheel hub for the axle shaft is shown in Picture 3. The axle shaft then is metalized and turned to proper size to fit tightly into the bore, or the hub bore is sleeved to fit over the shaft. A flywheel loose on the axle shaft results in vibration which in turn causes strain on the main bearings and damage. The picture also shows the specially built jig for supporting the wheel.

Worn places on the main crank shaft of the engine were built up by metalizing, after which the shaft was turned and machined (Picture 6) to proper size. Holes then were drilled in the shaft for forced-feed lubrication. It was this that helped make possible the increase in revolutions per minute and the consequent greater horsepower.

Cylinders also were rebored and fitted with sleeves for the pistons. A similar operation is demonstrated in Picture 5, which shows a 17-in. cylinder of a Cooper-Bessemer engine being rebored. The sleeve for this cylinder was fitted with a clearance of 1/30,000-in., the same as when the engine was new.

Also a part of the job was the lining and redrilling of the crosshead-bolt bearing holes. Nearly always after an engine has been in service any length of time, the bolt holes of the crossheads wear, allow play and get out of line, throwing a strain and uneven wearing on the bearing. Lining up the holes requires careful measurement, and in the past it generally has been the practice to provide new parts at considerable expense.

A jig (Picture 4) for lining up and redrilling these holes has been designed and built in an Oklahoma City machine shop. The operation also is shown in the picture although the crosshead is not one from either the Clark or Cooper-Bessemer engines mentioned above.



Pumping Experiment Designed To Check Various Factors

By G. M. STEARNS
Associate Professor of Petroleum Engineering, University of Oklahoma.

This is the second of two articles by the author on the factors affecting the operation of subsurface pumps. The first article appeared in the June 11, 1942, issue of The Oil and Gas Journal, Page 41, and dealt with the volumetric efficiency of oil-well pumps. In this article the author describes the set-up for testing pumps on the project sponsored by the A.P.I. and the University of Oklahoma. The effect of pumping speed, well depth, valve spacing, pump submergence, oil temperature, and the size and length of gas anchor will be tested with this equipment.

IN the early part of 1940, the Production Practice Committee of the Mid-Continent Section of the American Petroleum Institute recognized a need for additional investigation along the line of volumetric efficiency. Interest was centered principally upon the effect of solution gas in the pumped fluid and foam conditions in the well bore upon the efficiency of sucker-rod pumps. It was recognized by the committee that pump designs and installation assemblies are already so arranged as to take advantage of all the evident methods of securing maximum pump efficiency. Such items as proper plunger fit, valve spacing, maximum submergence, long stroke, slow motion, and gas separation are already being used in the manner that logical reasoning and field practice have shown to be most satisfactory. Even the best designs and assemblies, however, still operate at low efficiencies under certain conditions, particularly where gas is present in the pumped oil.

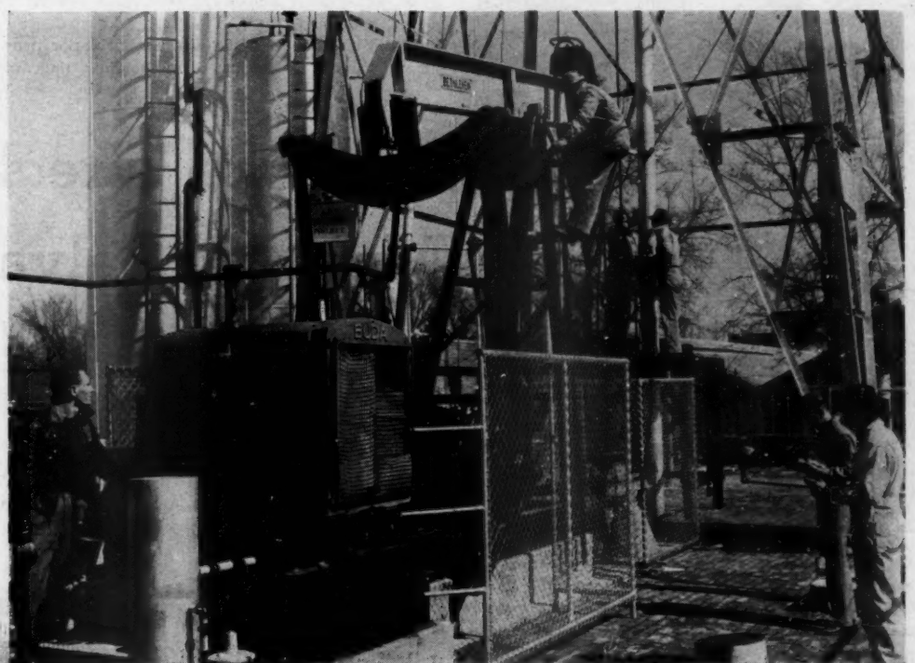
The committee selected University of Oklahoma as a site for the experiment. Equipment costing about $15,000 was contributed by various oil companies, supply companies, and the university. Students in petroleum engineering under the direct supervision of faculty members installed the equipment and are now proceeding with the experimental work.

In planning the equipment setup, the following requirements were kept in mind:

1. The conditions of an actual producing oil well must be reproduced as nearly as possible.
2. The equipment must be so arranged that all pertinent phenomena can be observed and mathematical data accurately recorded. For this reason, it was decided to place all of the equipment above the surface of the ground.
3. The equipment arrangement should be as flexible as possible in order to allow changing from one test run to another without excessive delay.
4. The hookup must be mechanically sound and safe for those who work on the project.

Fig. 1 is a schematic flow diagram of the equipment installation. The 87-ft. steel derrick, the pumping unit, and the tanks are set on concrete foundations. The 8⅝-in. by 66-ft. column of casing is supported over a concrete cellar by a set of casing clamps resting on I-beams which are imbedded in concrete near the top of the cellar. A 13-in. by 10-ft. rathole is provided directly beneath the casing column in the bottom of the cellar to allow easy removal of the bottom 10-ft. joint of casing to change the pump. Three sets of four ⅝-in. steel rods each are attached to the casing at various levels and to the derrick legs to guy the casing column during operation and to support it when the bottom joint is detached.

A string of 2½-in. tubing is installed inside the casing column. Various pumps and auxiliary as-



Right: A view of the principal items of equipment on the A.P.I. pump research project at Oklahoma University. In the left background can be seen the gaging tanks for measuring the volume of oil pumped. All moving parts are well guarded to insure safety of those working on the project. In the right background, the lower part of the casing column can be seen

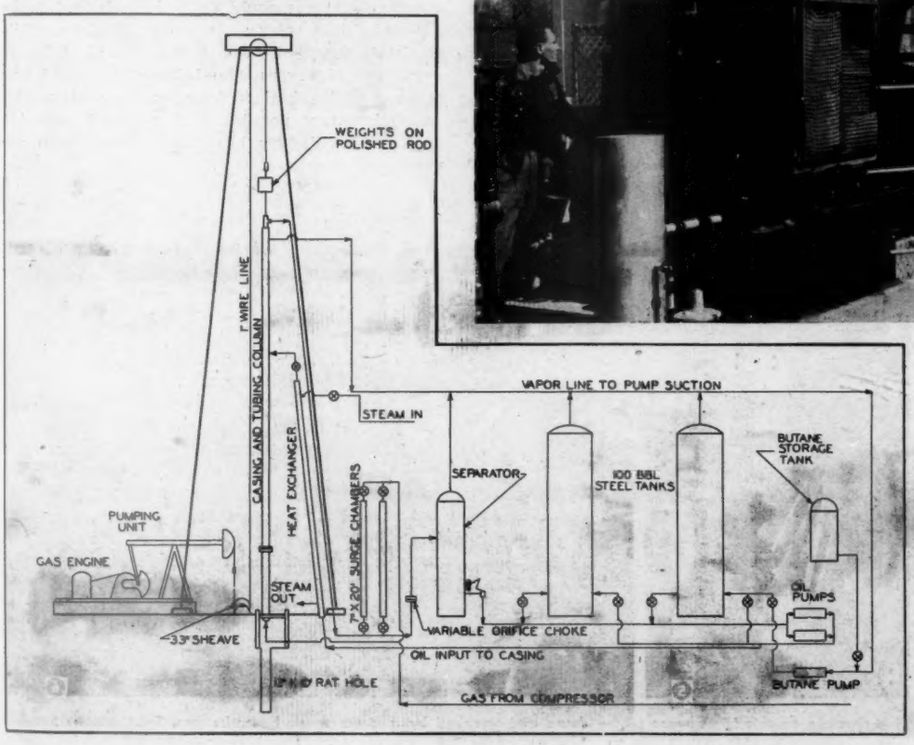
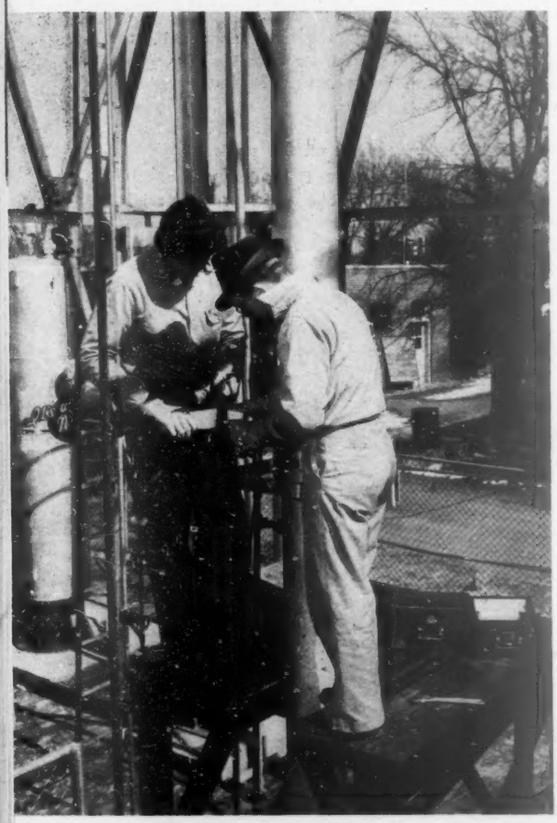


Fig. 1—(Left): Schematic diagram of equipment installation for A.P.I. pump experiment at the University of Oklahoma

semblies will be used on the bottom of the tubing during the series of tests. Conventional wellhead connections, polish rod, and sucker rods are used. A 1-in. wire rope is attached to the polish rod and runs over a 30-in. crown sheave down and under another sheave and is attached to the hanger reins of the pumping unit by means of a set of cable-tool wire-line clamps.

Two 6-ft. by 20-ft. steel tanks, each of about 100-bbl. capacity, are installed so that either may be used as a suction tank for the pumps delivering oil to the casing while the other receives the oil pumped from the "well."

The oil is charged into the casing annular space using two 6-in. by 4-in. by 6-in. steam-driven pumps. An indicating pressure gage is placed on the casing at the standing valve level, and the speed of the steam pumps discharging oil into the casing is regulated to maintain the desired submergence pressure. A restricted valve is used



Engine indicators are used to measure the pressure immediately below and immediately above the standing valve. They are attached to copper tubing which is connected to the tubing pump inside the casing.

on the discharge line into the casing to produce a frothy condition in the casing when pumping gasified oil. A steam-jacket heat exchanger is also provided on this input oil line to allow regulation of the temperature of the pumped oil.

The oil is pumped out of the "well" with the sucker-rod pump and discharged against a controlled back pressure held with a variable orifice choke on the 2-in. line to the oil and gas separator. The volume of oil pumped per unit of time is then measured in one of the 6-ft. by 20-ft. steel tanks, correction being made, of course, for any change of the oil level in the separator.

The oil being used is a heavy naphtha. It is of rather low vapor pressure, low viscosity, and high gravity as compared to most crude oils. It has an A.P.I. gravity of 49.9° at 60° F., a viscosity of 1.42 centistokes at 60° F., and a vapor pressure of 2.75 lb. per sq. in. at 100° F. This type of fluid was chosen because most of the experimenting already done along this line has dealt with oils of relatively high viscosity and density. It was felt that pumping of the lighter oils would be a field less intensively investigated.

Tests are being made first to determine the effect of variations in certain factors upon the volumetric efficiency of one type of pump assembly when pumping oil of the specifications given above. This is accomplished by holding all controllable variables constant except one for each test. Variation of the one variable and subsequent plotting of the pump efficiency for various values of that one factor will indicate the effect of that one isolated condition. In a like manner, each controllable factor can be isolated one at a time.

The variables investigated in this manner include:

1. Pumping speed.
2. Well depth.
3. Valve spacing.
4. Pump submergence.
5. Oil temperature.
6. Size and length of gas anchor.

Similarly, different pump assemblies with the same oil will be tested to determine the effect of each variable.

Then, it is planned to dissolve gas in the oil and raise its vapor pressure by adding butane and propane to it. The same series of tests as used with the original oil will then be repeated with each pump assembly. The fluid system is closed to prevent loss of vapors and make possible the maintenance of quite a high vapor pressure of the oil. As indicated on the flow diagram, Fig. 1, a separate pump is provided to charge butane and propane into the system. A gas compressor is also provided to furnish natural gas. Connections are made so that gas may be bubbled through the annular space inside the casing during the tests when it is so desired.

At the present time the first series of tests with the original oil is about completed. The equipment installation has been proved to be mechanically sound, and it is gratifying that the results so far obtained seem reasonable and consistent. It should be possible to publish some results which may be of concrete value to the oil producing industry within the year.

Eleven petroleum engineering students and two faculty members are engaged in making the tests. Acknowledgements should be made to Herbert F. Beardmore, chairman and the other members of the Production Practice Committee of the Mid-Continent Section of the American Petroleum Institute, for the material, services, and other help that they have contributed to make this study possible, and for permission to publish this article. Acknowledgements are also due to the oil operators and supply companies who contributed equipment and funds. These donors are:

Amerada Petroleum Corp.; British American Oil Producing Co.; Gulf Oil Corp.; I. T. I. O. and Cities Service Oil Co.; Phillips Petroleum Co.; American Steel Derrick Co.; Bethlehem Supply Co.; Buda Engine Co.; Hercules Tool Co.; Hinderliter Tool Co.; S. M. Jones Co.; Merco Nordstrom Valve Co.; National Supply Co.; National Tank Co.; Sargent Engineering Co.; Engineering Co. of Tulsa; J. P. Ratigan Co.; Union Wire Rope Co.; Viking Pump Co., and Worthington Compressor Co.

Derricks Wrecked by Storm May Aid Salvage Program

Southeast of Gladewater in the East Texas field are five pumping derricks that were blown down and wrecked by a high windstorm several months ago. In the accompanying photograph the light concrete corners on the wrecked derrick in the foreground furnish an explanation as to why the steel structures were unable to withstand the wind.

The photograph is of interest in the light of the scrap-steel drive now under way. Some of the derrick parts could easily be salvaged to be assembled into one or two rebuilt derricks, while the badly damaged parts should be junked. There are many observers who believe that sufficient scrap could be obtained from sources such as this to obviate any possibility that sound pumping structures will ever have to be torn down for armament purposes.

Five derricks on this lease were blown down and wrecked by a storm several months ago. Four appear here

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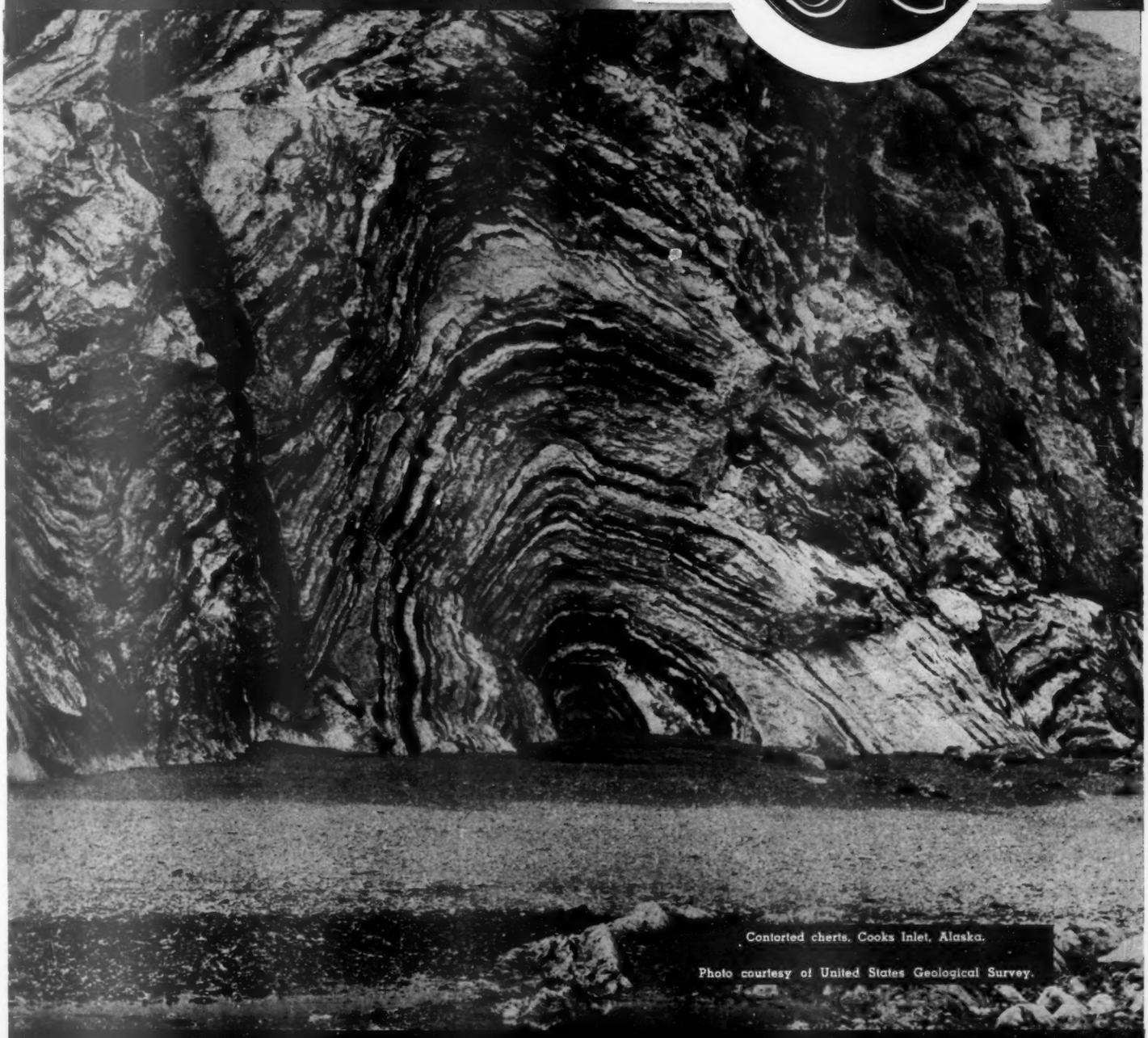

Contorted cherts, Cooks Inlet, Alaska.

Photo courtesy of United States Geological Survey.

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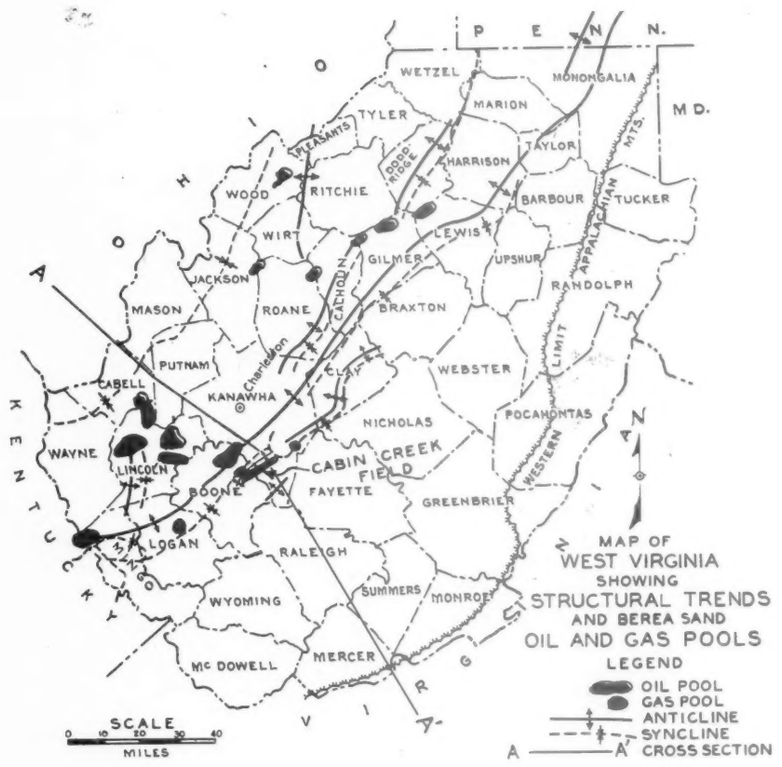
TYPICAL OIL-FIELD STRUCTURES

Monocline

Cabin Creek Field, Kanawha County, West Virginia

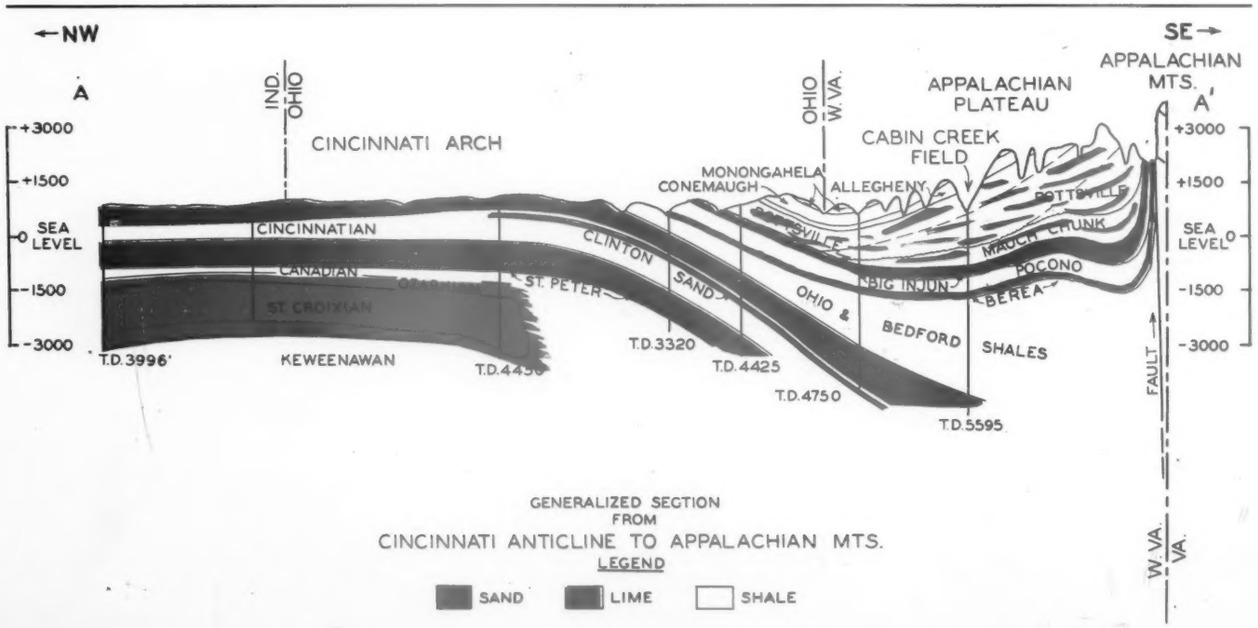
(Compiled by The Oil and Gas Journal)



GENERAL GEOLOGY: The Appalachian basin lies between the highly folded and overthrust Appalachian Mountains and the Cincinnati geanticline of western Ohio. Both areas were uplifted at various times from early Paleozoic time onwards but where the Cincinnati geanticline remained a comparatively simple structure which never rose far above sea level, the Appalachians were uplifted as a mountain range at frequent intervals during the Mississippian, Pennsylvanian and later times. The result of this uplift was that clastic sediments were deposited in great thicknesses in the basin in front of the mountains.

During early Mississippian time the whole area was not far from sea level and lenticular sands were laid down in the eastern part of the basin while in Ohio sands of comparable age form irregular deposits. The basal sand is generally referred to as the Berea sand, although all sands so named are not necessary contemporaneous.

During the period when the basin was subsiding and filling with sediments, the folding movements in the mountains to the east were transmitted to these sediments and a series of sharp anticlines and synclines were formed along trends parallel to the folding in the mountains. A large number of sands in the sedimentary series contain oil and the folding has altered the oil into high-grade paraffin-base crude known as Pennsylvania Grade.



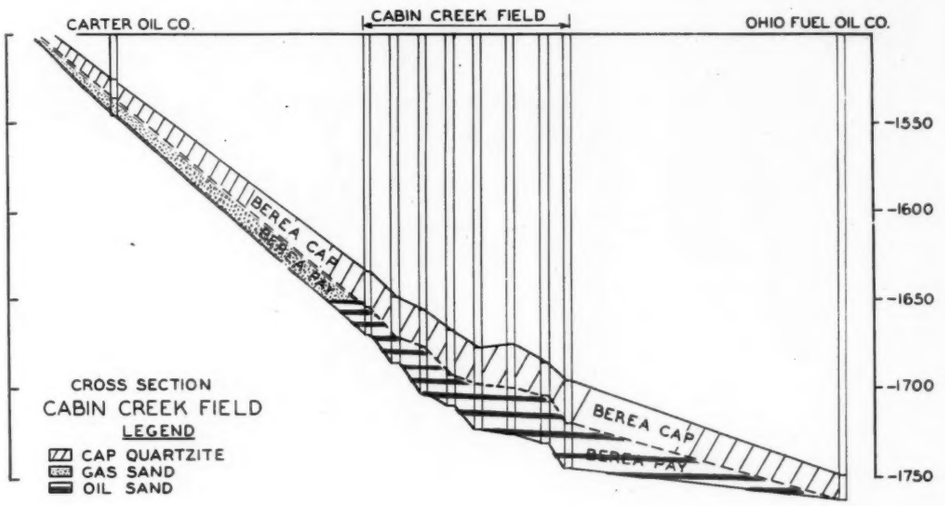
STRUCTURE: The Cabin Creek field lies on the flank of the Warfield anticline in a lenticular sand of Berea age. The formation carries no water so that the oil is found downstructure with a gas cap in the upper part of the lens.

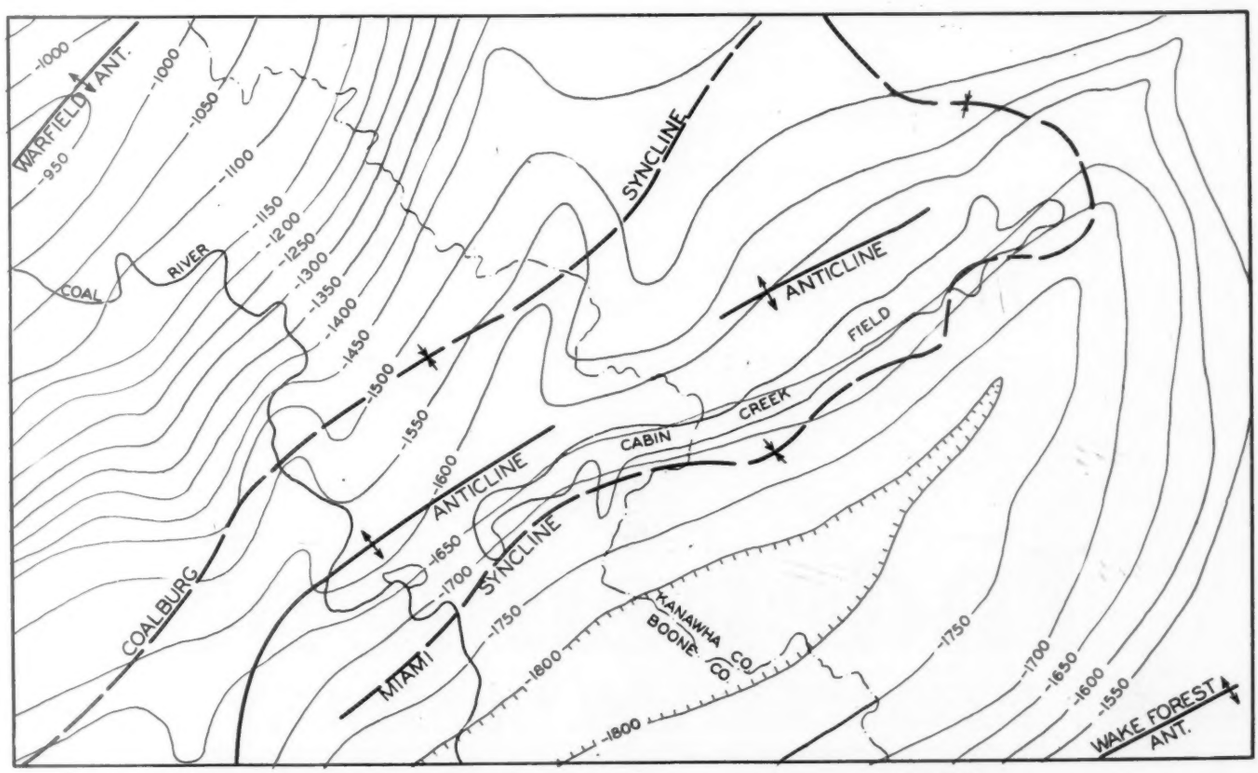
OIL-BEARING HORIZONS: Although there is but a single pay in the Cabin Creek field, there are a number of other sands in the Appalachian basin which form reservoirs. With the exception of the Lower Devonian Oriskany sand, these tend to be older in the northern Pennsylvania sector than in Southwest Pennsylvania and West Virginia where they are of Mississippian and Pennsylvanian age. They are all more or less lenticular in nature and correlations from one field to another are difficult. This form of deposition of multiple lenticular sands with shales and minor amounts of limestone is typical of offshore deposition near a slightly elevated shore and is often referred to as "flysch." It is similar to the Pennsylvanian of eastern Oklahoma and Kansas.

ORIGIN OF THE OIL: From a general theoretical standpoint, the presence of oil in flysch deposits is easily understood. They are near-shore deposits whose environment is one in which oil deposits are believed to be formed. However, in Cabin Creek, as in other pools in the Appalachian area, the sands carry little or no water and as a result the oil occurs well downstructure. There must originally have been water in the sediments but no generally accepted explanation has been offered concerning its disappearance.

EXPLORATION METHODS: Drilling gas sands downstructure forms the best-known method of locating these fields.

Principal reference: Cabin Creek Field, West Virginia, by Theron Wasson and Isabel B. Wasson, Structure of Typical American Oil Fields, Vol. 1, pp. 462-475.





SUBSURFACE STRUCTURE MAP
CABIN CREEK AREA
CONTOURED ON BEREA SAND
CONTOUR INTERVAL = 50 FT.

LEGEND
AXIS OF SURFACE SYNCLINE
AXIS OF SURFACE ANTICLINE
SCALE – MILES
0 1 2

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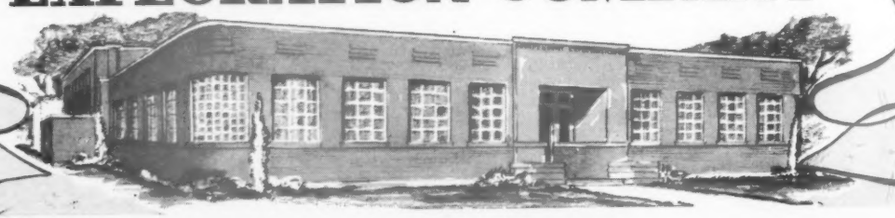


★ HOUSTON

★ TEXAS

Power Records Aid Operations

By W. H. STUEVE
Oklahoma Gas & Electric Co., Oklahoma City, Okla.

How the permanent records of power consumption provided by electrical installations in oil fields, pipe-line stations and refineries serve as an accurate check on operational efficiency is explained in the accompanying article. Study of such records reveal ways for adjusting operations to insure the most effective utilization of equipment and savings in power consumption.

ANY type of electrical power installation made in the oil field offers the advantage of having a permanent record at all times of the actual amount of power required to perform certain functions, whether it be that of pumping oil wells, drilling oil wells, transporting oil or refining oil. The instruments used consist of a "rate of taking" electric energy meter, commonly known as a demand meter, and a totalizing meter showing the amount of electrical energy consumed during certain periods of time. These meters are very accurate and positive in performance, and the readings can be interpreted readily, and from the interpretations definite conclusions can be made.

In the oil-transportation field the electrical energy input to pumping stations usually passes through one meter and, therefore, a positive record is made of all energy consumed. Such records will show the electric power input at definite stated periods for the complete length of time under observation. These readings, for specific dates or specific hours, can then be correlated with the pressure and volume readings from the charts of the pipe-line company for identical time intervals.

Records Show Efficiency

Thus, if the electric power input to a conventional induction motor is known and recorded, the amount of brake power delivered to the shaft of the motor and consequently the pump can easily be determined. The efficiency of the electric motor can be determined readily from the manufacturer's guarantee, and the theoretical fluid power can be calculated from the known deliveries of oil and total indicated pressures. The efficiency of the conventional induction motor operating at 1,760 r.p.m. is about 92 per cent and 93.5 per cent for motors operating at 3,550 r.p.m. for full load and three-quarter load in the size ratings of 200 to 400 hp.

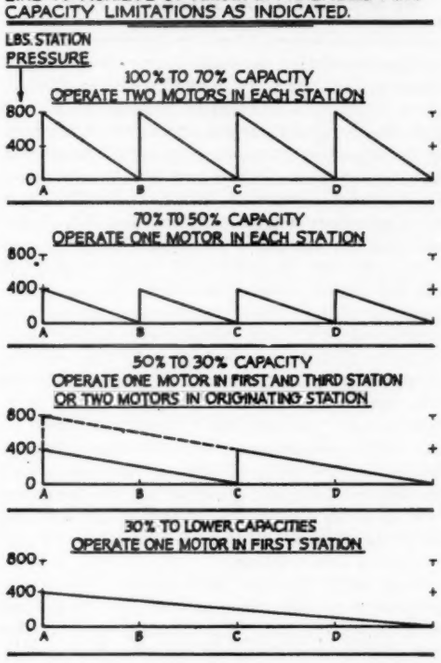
These electrical records then will disclose the efficiency of the entire pipe line covering any period of time desired. One such electrified pipe line was studied, which has been in operation since 1929, to determine its efficiency from the electrical power input readings. The pipe line is 126 miles long and is relatively level, that is the originating station is at the same approximate elevation as the destination with no intervening elevations to affect the entire hydraulic gradient of the system.

There are four pump stations along the pipe line, each spaced about 31.5 miles apart and each station is equipped with two 400-hp., 1,760 r.p.m. motors, each direct connected to a 40,000-bbl. per day centrifugal pump capable of building up a pressure of 400 lb. per sq. in. When two of these pump units are operated in series the total pressure becomes 800 lb. per sq. in.

The record for four selected years is given in Table 1, showing the total energy consumed, barrels delivered, and corresponding over-all efficiencies of the pipe line. The 4 years selected for study are those when the actual deliveries varied from 39,800 bbl. per day, the maximum, to a minimum of 23,800 bbl. per day, with several other intermediate years studied to verify the conclusions drawn.

A further study of Table 1 reveals that the electric energy required in terms of kilowatt hours per barrel delivered through 126 miles of line, varies from 1.43 at 100 per cent capacity to 0.72 at 60 per cent capacity, which reflects the small loss in over-all average efficiency, in dropping from 68 per cent in the maximum year to only 54 per cent in the minimum year. This slight change in over-all efficiency of the four pump stations can be accounted for in that only one motor in each pump station is required to be operated when the average capacities required are equal to or less than 70 per cent of the full 100 per cent capacity, as is the case when both motors are required. Also, note that in the minimum year only 30 per cent of maximum electric consumption is used to deliver 60 per cent of the total ultimate line capacity.

FIGURE 1
SHOWING NUMBER OF MOTORS TO OPERATE IN EACH PUMP STATION OF A MULTI-PUMP STATION PIPE LINE TO ACHIEVE OPTIMUM EFFICIENCIES FOR CAPACITY LIMITATIONS AS INDICATED.



All of these comparisons mentioned above reflect the able and efficient management of the line dispatchers. Usnally the refinery commitments are anticipated some few days in advance of the monthly meter-reading periods, which enables the oil dispatcher to select the most efficient operation of his motor equipment for the next power billing period. Efforts are made by the power utility to have the meter-reading period coincide with the calendar-month deliveries required by the pipe-line operators.

The lowest electric power costs are obtainable when load factors, or even rate of power takings, are of the highest order. In effect, this means that if the refinery anticipated deliveries are to be about 70 per cent of the maximum possible capacity of the pipe line, during the next month, the management would not operate at full 100 per cent capacity of the line for 21 days and then shut down the remaining 9 days to gain the best over-all efficiency of 68 per cent (Table 1), but it would be operated continuously for 30 days with one motor in each pump station in spite of the slight falling off in the over-all efficiency to 54 per cent.

Flexible Operation

The flexibility of operation, when electric motors are used for prime movers, is also noteworthy in the conventional pump station consisting of two units each capable of exerting one-half the total pressure required. Thus, from maximum capacity down to 70 per cent capacity to be delivered, two motors are required to be operated in each station. When capacities range from 70 per cent down to lower values of deliveries, the use of Fig. 1 is offered, showing graphically the initial working pressures in four pump stations—*A*, *B*, *C*, and *D*—and the number of motors to be operated to gain the lowest possible unit power cost.

Referring again to Table 1, it is noted that the power required to pump 1 bbl. of oil at the maximum rate for 126 miles is 1.43 kw. hr., or 1.12 kw. hr. per 100 miles.

Ordinarily the total costs of pumping oil, including power, labor, fixed charges, and amortization on the total investment in lines and stations, and supervision, amount to approximately 3 cents per barrel per 100 miles.

Design development in centrifugal pumps in recent years indicate manufacturers can now guarantee efficiencies of the order of 84 per cent at full rated capacity in the speed range of 3,000 to 3,550 r.p.m. Thus, in the case of the maximum year shown in Table 1, wherein the over-all efficiency of the pumps and motors were calculated to be 68 per cent, it is now possible to raise this to 78 per cent by changing the motors and pumps to 3,550 r.p.m. This increased over-all efficiency should in turn effect a saving of electric power input of 2,000,000 kw. hr., or in terms of money, the change to higher speed pumps and motors should return the invested capital in 8 or 10 months, after allowing reasonable salvage value for the 1,750-hp. equipment replaced.

TABLE 1—ELECTRIC ENERGY CONSUMED AND BARRELS DELIVERED BY FOUR PUMP STATIONS LOCATED APPROXIMATELY EQUIDISTANT IN A LEVEL 126-MILE 10-IN PIPE LINE PUMPING CRUDE OIL AVERAGING 125 S. S. U. VISCOSITY AND GRAVITY OF 30° B. MAXIMUM CAPACITY 40,000 BBL. PER DAY

Year—	Electric energy consumed by 4 stations kw. hr.	Barrels delivered to destination	Electric energy required per bbl. kw. hr.	Per cent over-all efficiency of pumping equipment	Per cent average capacity of pipe line
Maximum	20,862,500	14,510,731	1.43	68	100
Intermediate	16,177,000	12,850,474	1.26	60	88
Intermediate	14,296,700	12,275,433	1.17	57	84
Minimum	6,206,600	8,688,550	.72	54	60

The *HALOGENATION* of Aliphatic Hydrocarbons (Part 3)

By GUSTAV EGLOFF and M. ALEXANDER
Universal Oil Products Co.

This article is the third of a series discussing the chemical reactions involved in halogenating straight-chain hydrocarbons. Following this series will be articles describing the oxidation and nitration reactions of these hydrocarbons. Collectively the work represents a valuable summary of basic reactions normally applied to hydrocarbons in the synthesis of hundreds of petroleum chemical derivatives. The first portion of the series appeared August 20, Page 41 and the second, August 27, Page 39.

D. Halogen Addition Other Than X_2 and HX to Alkenes

Some halogenated reagents other than halogens and hydrogen halides form addition compounds with alkenes. Michael obtained 1-iodo-2-chloropropane and a small amount of 2-iodo-1-chloropropane from interaction of iodine monochloride and propene.[102] Although Ingold and Smith obtained more 2-iodo product than did Michael, they found a predominance of the 1-iodo isomer and concluded that the iodine end of the molecule initiates the reaction.[103] 3,4-Dichlorohexane was obtained in appreciable quantities from action at 50° to 60° of phosphorous pentachloride on 3-hexene.[70] Similar results were obtained with sulfuryl chloride as reagent.

The introduction of certain substances ordinarily serving in the capacity of solvent involves the addition of a hydroxyl or an alkoxyl group and one halogen to alkenes. Compounds containing halogen and atoms or groups other than hydrogen also bring about the addition of the other group along with the halogen. Water in the reaction of ethene with chlorine may be used under certain conditions for the preparation of ethylene chlorohydrin.[104,105] The reaction was aided by a cupric chloride catalyst.[105] Formation of chlorohydrin over dichloride was favored by a high ratio of alkene to chlorine and also by higher temperatures.[104] It is probable that chlorine and water form hypochlorous acid which, in turn, adds to the alkene.[105] In alcoholic solvents, halomethoxy compounds have been found[106,107] but under certain conditions chlorohydrins formed.[108] Chloroalkylation was improved by a large excess of alkali produced by ammonia[109] and by chlorination of the dichlorides through the use of a chloroamide reagent.[110] The presence of acetic acid, acetic anhydride, or methyl acetates leads to the formation of haloacetate addition compounds.[111] 2-Butene, 2-methylpropene, and 2-methyl-2-butene reacted with acetyl iodide to give iodoacetates, and 2-methyl-2-butene underwent further changes so that a ketone was ultimately formed.[112]

E. Catalytic Addition of Halogens to Alkenes

Addition of halogens and halogen acids to alkenes is catalyzed by metals, metallic salts, and certain organic compounds. Most of these catalysts accelerate the normal addition defined by Markownikoff's rule. Abnormal addition, however, is catalyzed by a few metals.

In the chlorination of ethene from 70° to 120°, an iron reactor seemed to function as a positive catalyst but under the same circumstances a lead reactor was relatively ineffective.[113] Lead tetraethyl accelerates addition of chlorine to alkenes but effectiveness disappears at elevated temperatures where substitution sets in.[65] Calcium halides[114] on asbestos eliminated substitution reactions almost completely in the addition of bromine to ethene and propene at about 82°. In the reaction of halogens on 2-methylpropene and 2-methyl-2-pentene, the use of the corresponding calcium halide favored formation of much more addition product than was obtained without the calcium halides.[67] Experiments with palmitic acid indicate that bromine-ethene addition may be catalyzed by polar groups. Two kinds of absorbents may be prepared with palmitic acid. The noninverted type with the hydrocarbon chains on the surface accelerates the addition only slightly while the inverted acid with carboxyl groups on the surface increases the reaction rate immensely.[115] Quinoline acts catalytically in bromine addition to alkenes.[78] Hydrogen bromide is also effective in this reaction.

Since alkyl chlorides undergo thermal decomposition to olefins and hydrogen chloride, the use of a catalyst which will facilitate preparation below the decomposition temperature is desirable. Aluminum chloride brought about reaction between alkenes of 4 to 12 carbon atoms containing

$$-\overset{H}{\underset{|}{C}}=\overset{H}{\underset{|}{C}}-$$

groupings and dry hydrogen chloride[116,117] at —78°. Addition to ethene at —80° showed a higher velocity with an aluminum chloride catalyst than with bismuth chloride.[118] Tulleners found that increasing temperature decreased the yield of ethyl chloride from aluminum chloride catalyzed ethene addition but later investigators[119] have obtained 91 per cent ethyl chloride at 27°. The branched chain alkenes and 2-pentene in the presence of aluminum chloride yielded byproducts which probably resulted from polymerization.[120] Compounds containing a tertiary unsaturated carbon atom react at —80° without a catalyst.[116,117,120] Ferric chloride accelerated the addition of hydrogen bromide and chloride at room temperature.[121,122] At 80°, decomposition of propene in the presence of ferric chloride and also bismuth and zinc chlorides on silica gel occurred but mercuric, nickel, aluminum, and calcium chlorides on silica gel acted as satisfactory catalysts.[120] Reaction of hydrogen chloride with ethene from 100° to 180° proceeded well with anhydrous bismuth chloride as catalyst but ferric, aluminum, and vanadium chlorides were not so effective.[123] Good results were also obtained using bismuth bromide in the hydrogen bromide reaction. Stannous and stannic chlorides have been successfully used in hydrogen halide additions.[124]

The use of certain catalysts made possible the addition of hydrogen chloride to pentenes in the optimum temperature range (70° to 150°) of the reactions.[125] The catalysts on active carbon had the following effects in pentene reactions: chromic and ferric chlorides were not active; mercuric, cupric, cadmium, manganous, bismuth, aluminum, and antimony chlorides were moderately active; stannic and zinc chlorides were very active.

In hydrogen bromide addition to 2-methyl-1-butene, ferric chloride seemed to favor greatly the production of the tert-bromide, which forms only through rearrangement, over the secondary product.[83]

Addition of the bromine group from hydrogen bromide to the more highly hydrogenated unsaturated carbon is accelerated by some metals.[126,127] In order to catalyze abnormal addition, it appears that on reaction with anhydrous hydrogen bromide the metal must form a metal bromide which is neither a strong accelerator of normal addition nor a powerful inhibitor of abnormal addition.[127] The mechanism seems to be similar to that of the peroxide catalyzed normal addition.[128,129] The mechanism involves the following steps:

$$HBr + Fe \rightarrow BrFe. + H.$$

$$HBr + H. \rightarrow H_2 + Br.$$

$$H_2C = CH - CH_3 + Br. \rightarrow BrH_2C - CH - CH_3$$

$$BrH_2C = CH - CH_3 + HBr \rightarrow BrH_2C - CH_2CH_3 + Br$$

In the presence of peroxides, a liquid phase reaction mixture of hydrogen bromide and 1-alkene produces considerable quantities of 1-bromoalkane

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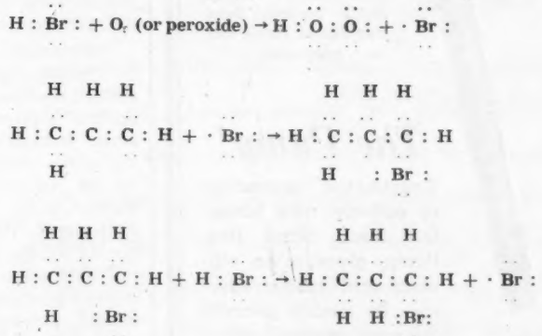
while the same mixture without peroxides yields a predominance of 2-bromoalkane. The latter isomer is predicted by Markownikoff's rule and is designated as the "normal" product. Additions to compounds other than hydrocarbons containing a terminal double bond are similarly affected by peroxides. Some solvents seem to direct the bromine group to the abnormal position in the absence of peroxides but others inhibit abnormal orientation even in the presence of peroxides. It seems that the effect is produced through the action of oxygen or peroxides of the reagent rather than on the alkene itself since the effect is not observed with other hydrogen halides. Abnormal products do not result from peroxide mixtures of either hydrogen chloride or hydrogen iodide.[129 130 131] Peroxides do accelerate the rate of normal addition of hydrogen iodide,[129] but have no effect on the speed of hydrogen chloride addition.[122 130] Failure to obtain abnormal products from hydrogen iodide is attributed to rapid reduction of the peroxide before abnormal addition can set in and to catalysis of the normal reaction by iodine liberated in the reduction reaction.[132] The catalytic effect of iodine on the normal reaction has been shown by hydrogen iodide and propene. At 0° the reaction proceeded 2 hours, while at —80° with addition of peroxide, which liberates iodine, it went to completion in less than 1 minute. Hydrogen iodide inhibits abnormal addition even in a reaction of hydrogen bromide in the presence of peroxides. Hydrogen fluoride and hydrogen chloride undergo endothermic reactions which will not support the long, rapid chain reactions necessary for abnormal addition.[133] Although the role of the peroxide has not been definitely established, it seems almost positive that abnormal addition proceeds by a rapid chain reaction. This theory is further substantiated by results encountered in metal catalyzed abnormal additions.[127 128]

In the presence of benzoyl peroxide or ascaridole, addition of hydrogen bromide to propene, 1-butene, and 1-pentene at room temperature resulted in the abnormal addition products, 1-bromoalkanes.[134 135 136] The higher 1-alkenes from 1-nonene through 1-nonadecene produced abnormal products under similar conditions.[137] 4,4-Dimethyl-1-pentene reacted with a stronger tendency to give the abnormal products than did other hydrocarbons tested.[138] The normal product was obtained only when a good antioxidant was used in the absence of air. Whitmore obtained the abnormal product in the reaction with dry hydrogen bromide at 0° in air without added peroxides and attributed the results to the nature of the neopentyl group.[140] 3-Methyl-1-butene gave small yields of primary bromide compared to those from other 1-alkenes.[95] This reaction, however, was complicated by rearrangement and considerable tertiary bromide was formed either with or without peroxides. Isobutene yielded about 100 per cent tert-butyl bromide in the presence of oxygen and while the isobutyl compound was produced in the presence of ascaridole, the abnormal reaction was not so pronounced as with the *n*-1-alkenes.[139 141] 2-Isopentene in the presence of lauroyl peroxide reacted to give over 60 per cent abnormal product, 2-methyl-3-bromobutane.[142] This excludes limitation of the effect to 1-alkenes. Better yields of 2-methyl-3-bromobutane were obtained by Michael who used ascaridole as catalyst.[121]

The conditions of temperature and light vary somewhat with other factors. Light catalyzes the reaction already taking place. Temperature increases usually favor abnormal addition. Propene, for example, produced only 30 per cent abnormal product at —78.5°, but under the same conditions at room temperature, 87 per cent normal bromine was obtained.[134] The amount of peroxide catalyst is related to the composition of products. The yield of abnormal product from 2-isopentene increased from about 77 to 92 per cent with an increase of ascaridole from 0.002 molar to 0.02 molar.[121] Solvents influence the reaction considerably. In the absence of peroxides, abnormal hydrogen bromide addition to 1-pentene and 1-heptene proceeded in the presence of glacial acetic acid, heptane, or carbon tetrachloride, but aqueous hydrogen bromide gave the normal product.[140] Kharasch, however, disputed this work since he obtained the normal product of 1-pentene in the presence of glacial acetic acid or propionic acid under antioxidant conditions.[136] The effectiveness of solvents in the promotion of abnormal addition to 2-methylbutene under peroxide conditions is shown by the following series: carbon disulfide > propionic acid, water > benzonitrile, ethyl bromide, pentane > nitrobenzene.[141] Under antioxidant conditions solvents promote the normal addition in the following order: propionic acid > benzonitrile > water > pentane, carbon disulfide, ethyl bromide > nitrobenzene. Kharasch concluded that solvents affected the velocity of the addition but had no directive influence. No orienting effect of pentane or ethyl bromide on 2-methyl-2-butene addition of hydrogen bromide was shown by comparison of the peroxide catalyzed reaction with the reaction under antioxidant conditions, but dilution with ethyl bromide seemed to inhibit the normal addition to such an extent that abnormal addition took place.[142] Michael attributes considerable importance to solvents.[121] Appreciable quantities of the abnormal products were obtained in the presence of peroxides with ether at —78°, with acetic acid at 0°; and with small amounts of methanol or ethanol at 0°. Carbon disulfide, pentane, acetic ester, and acetone in absence of peroxides gave no abnormal product. In the presence of peroxides and methanol or ethanol, a peculiar effect was observed. The ratio of abnormal products decreased with increasing temperature.[95] 2-Methyl-1-butene yields secondary and tertiary bromides in reactions without solvents or peroxides but about 50 per cent primary product forms in the presence of ether and in the presence of antioxidants when acetic acid is present. Dichloroacetic acid lowered the amount of primary product and trichloroacetic acid eliminated the primary product. As observed with 2-methyl-2-butene in methanol, reaction velocity was lowered by increasing temperature.

The results of both Urushibara and Kharasch on peroxide catalyzed as well as metal catalyzed abnormal addition reactions support chain reactions.[127 128] Formation of abnormal isomers through rearrangement does not explain the effect since addition of peroxides to normal isomers does not bring about rearrangement.[135] Michael and Weiner offer an interpretation "based upon the primary formation of double molecules of hydrogen bromide and solvent."[121] The double molecules then unite with the relatively positive unsaturated carbon atom forming a grouping which becomes relatively negative to the previously more negative carbon. The bromine then functions in accordance with the reversed relative negativity of the carbons. A similar reversal by peroxide instead of solvent would account for abnormal additions observed with peroxides. Other work supports a theory that abnormal addition is brought about through formation of peroxide complexes followed by change of negativity from one unsaturated carbon to the other.[144] Smith postulates a chain mechanism but disagrees with Kharasch on the hypothesis that bromine atoms are responsible for the reaction.[145] According to the latter, normal addition occurs through a chain mechanism involving polar ions and molecules while abnormal addition proceeds through a bromine atom chain mechanism. The proposed role of the peroxide and of chain propagation in abnormal addition is shown in the following example:[146]



The inhibitory effect of antioxidants is probably caused by their efficiency as chain breakers.[127]

F. Photohalogenation of Alkenes

Light accelerates addition of halogens and halogen acids to alkenes. It seems to have no orienting influence on hydrogen halide addition to the double bond and catalyzes both normal and abnormal reactions.[147] Photohalogenation is important since it makes possible a study of chain mechanisms of halogenation.

Iodination, which proceeds slowly in the dark is readily accomplished by illumination. Under an incandescent lamp, complete iodination of 1-butene was accomplished below —60° in dichloromethane and chloroform.[148] Quantum yields from the iodination of several compounds under light

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of wave length 436 mm. at —55° were propene > cis-2-butene > 1-butene > trans-2-butene > i-2-butene > ethene and, under light of wave length 546 mm., were cis-2-butene > propene > 1-butene > i-2-butene > trans-2-butene > ethene.[149] The reaction rate seemed to be proportional to light intensity and also to the concentrations of both reactants. The velocity of photoiodination of 2-pentene was proportional to the square root of the intensity of radiation absorbed.[150] Quantum yields from the 2-pentene reaction were high and results, in general, favored a chain mechanism.

Experimental evidence indicates that photo addition reactions are of considerable chain length.[151] Chain initiation is probably brought about through the production of a halogen atom by a quantum of light with propagation through a halogen atom or free radical. The chain breaking reaction differs with single cases. Although one type of reaction occurs with similar radicals and with radicals and oxygen, the difference in chain breaking reactions is great enough that quantum yields and reaction rates vary with the reactants. Kinetic studies offered no basis for chain propagation through tri-atomic halogens as postulated by Roffefson.[152]

4. Halogen Addition of Alkadienes

Halogens and alkadienes form dihaloalkenes which may be isolated under certain conditions and undergo further halogenation to produce tetrahaloalkanes. The halogen acids yield corresponding haloalkenes and dihaloalkanes. Alkadienes also yield addition products from reaction with other reagents containing halogen. Orientation differs with specific hydrocarbons, reagents, and conditions. Some 1,4-addition, however, was observed in most of the reactions. This occurrence is often found with conjugated unsaturated systems. This process involves addition of the reagent to the first and fourth carbon atoms accompanied by a shift of unsaturation to the position between the second and third carbon atoms. Investigators have not yet agreed upon any one interpretation of the mechanism.[153]

The reaction of gaseous butadiene and bromine to produce 1,4-dibromo-2-butene is essentially a surface reaction.[154,155,156] It took place at 25° under artificial light with nitrogen as a diluent. The reaction is highly sensitive to oxygen. Since coating of the surface with paraffin had little effect on the reaction, it probably takes place on the surface of the reaction film rather than of the container.[156] This phenomenon is further evidenced by the fact that the rate increased until the walls were covered by a unimolecular layer of reactants and then became constant. Experimental data indicates a chain reaction initiated at a wall and broken by oxygen.[154]

Reaction of 2-methyl-1,3-butadiene with chlorine in carbon tetrachloride yielded the 1,4-compound predominantly as addition product and an appreciable quantity of 1-chloro-2-methyl-1,3butadiene which would indicate a substitution reaction.[157]

The liquid reaction of dimethyl-1,3-butadiene in inert solvents at 15° produced 1,4-addition compounds, that is, dibromodimethyl-2-butenes.[158] The reaction of butadiene with chlorine in carbon disulfide, however, yielded twice as much 1,2-addition product as 1,4-product. The following course was postulated for formulation of the two dichloro compounds.[159]

$$CH_2 = CH - CH = CH_2Cl_2$$

$$\rightarrow CH_2(Cl) - CH - CH = CH_2 \rightleftarrows CH_2 - CH = CH - CH_2(Cl)$$
$$\downarrow + \qquad\qquad \downarrow +$$
$$CH_2(Cl) - CH(Cl) - CH = CH_2 \qquad CH_2(Cl) - CH = CH - CH_2(Cl)$$

A suggestion was also made that rearrangement to the 1,4-compound follows formation of the 1,2-isomer. This theory falls in line with the relative difficulty in breaking the carbon-chlorine bond over that involved in breaking the carbon-bromine linkage and the fact that greater proportions of 1,4-compound are found in the bromine than in the chlorine reaction.[159]

Hydrogen chloride with butadiene yielded 3-chloro-1-butene and 1-chloro-2-butene.[160,161] The reaction without catalysts was independent of time, temperature, and solvents.[160] The mixture of 75 per cent 3-chloro-1-butene and 25 per cent 1-chloro-2-butene was stable in the absence of catalysts, but rearranged in the presence of catalysts and reached a state of equilibrium. Ferric chloride brought about equilibrium most quickly and cupric chloride was effective, but hydrogen chloride was very slow while water or peroxides had no effect. The equilibrium mixture contained about 75 per cent of 1-chloro-2-butene. Elevation of temperature to 100° increased the amount of 3-chloro-1-butene in the equilibrium mixture.

Addition of hydrogen bromide[162] produced a mixture of 1-bromo-2-butene and 3-bromo-1-butene at temperatures from —78° to —12°. Addition of 2,5,5-trimethyl-1,3-hexadiene occurred in the 1,2-position.[163] In one butadiene reaction, the 1,2-addition product, 1-bromo-2-butene, was the only product.[161] 2-Bromo-2-butene was reported as the product from a reaction carried out in extreme antioxidant conditions. The latter product is evidence of an initial 1,2-addition. A comparative reaction carried out in the presence of air and peroxides gave a corresponding quantity of the 1,2-addition product, 1-bromo-2-butene. Later Kharasch found a mixture of products containing 3-bromo-1-butene as the product of 1,2-addition. The proportion of 1,4-compound, 1-bromo-2-butene, increased under peroxide conditions.[163] Addition of peroxides to a mixture of isomers favored rearrangement of the 1,2-isomer to the 1,4-compound.

Iodine chloride and butadiene, reacting at —35°, yielded a large quantity of 1,4-addition product and some 4-iodo-3-chloro-1-butene.[164] The product indicates that halogen action begins on the terminal carbon atom.

Sulfuric chloride and 2,3-dimethylbutadiene in the presence of stannic chloride forms a cyclic compound, 3,4-dichloro-3,4-dimethyl-2,5-dihydrothiophene.[165]

$$H_2C = C(CH_3) - C(CH_3) = CH_2 + SCl_2$$

$$\rightarrow CH_2(Cl) - C(Cl)(CH_3) - C(CH_3)(H_2C) - CH_2$$
$$\qquad\qquad\qquad

5. Halogen Substitution and Addition of Alken-ynes

Compounds containing both double and triple carbon-carbon bonds undergo substitution by, and addition of halogen atoms.

The triply bonded carbon substitutes a bromine or chlorine[166 167] atom for hydrogen on reaction with the corresponding alkaline hypohalite solution and an iodine atom[166] from a solution of iodine in potassium iodide. All three products are unstable and polymerize. The bromine substitution was much more rapid than the chlorine reaction. Relative yields obtained were bromo > iodo > chloro. In ammonia which removes the hydrogen iodide produced, reaction with iodine yields a substitution product.[169] At —34°, but-1-en-3-yne yielded 4-iodobut-1-en-3-yne in almost theoretical quantities.[169 170]

$$H_2C = CH - C = CH + I_2 + NH_3 \rightarrow H_2C = CH - C = CI + NH_4I$$

Pent-2-en-4-yne also produced the corresponding monoiodo substitution compound.[171]

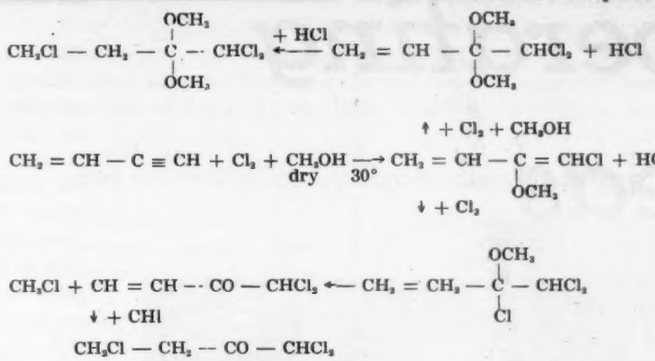
1,4-Addition seems to occur with conjugated alken-ynes. Hexadi-1,5-en-3-yne with chlorine primarily underwent a 1,4-addition and produced 1,4-dichloro-2,3,5-hexatriene.[172] Further halogenation, likewise, was 1,4-addition and the products were 1,3,4,6-tetrachloro-2,4-hexadiene and 1,2,3,4,-5,6-hexachloro-3-hexene. Bromine addition to hexadi-1,5-en-3-yne yielded the corresponding hexabromo compound, 1,2,3,4,5,6-hexabromo-3-hexene.[172] The dichloro product was obtained at —50° and 0° and the tetrachloro near —50°. Preparation of hexachloro-3-butene was carried out between 60° and 70°; small yields were obtained and most of the product seemed to be polymerized forms.[172]

Attempts to prepare 1,2-dichloro-1,3-butadiene from but-1-en-3-yne were not very successful through antimony chloride, cuprous and cupric chlorides with ammonium chloride, or ferric chloride with ammonium chloride.[167] A successful method was devised by primary formation of the 4-chlorobut-1-en-3-yne through sodium hypochlorite and subsequent addition of hydrogen chloride.

The first step in hydrogen chloride addition to but-1-en-3-yne was a 1,4-addition. Although the final product was 2-chloro-1,3-butadiene, the 4-chloro-1,2-butadiene intermediate was isolated.[174] With excess hydrogen chloride, 2,4-dichloro-2-butene also formed. Cupric chloride, calcium chloride, and other salts seemed to increase greatly the rate of isomerization to the 2-chloro-1,3-butadiene. From aqueous hydrogen bromide reactions, only 2-bromo-1,3-butadiene and 2,4-dibromo-2-butene were isolated.[175] This reaction was much faster than the hydrogen chloride reaction, however, and it is highly probable that the true course was a 1,4-addition followed by rearrangement. Hydrogen chloride on hexadi-1,5-en-3-yne resulted in 1,3-dichloro-2,4-hexadiene.[176] Even in the presence of the catalysts, cupric chloride or calcium chloride, two successive 1,4-additions were the only reactions.

Addition of methoxy groups accompanied chlorination when methanol was used as solvent in the reaction of chlorine and but-1-en-3-yne.[177] 1-Chloro-2-methoxy-1,3-butadiene was isolated as an intermediate and methyl chloride, 1,1,4-trichloro-2,2-dimethoxy-butane, and 1,1,4-trichloro-2-butanone were isolated as end products.

The following course of reaction was postulated for the formation of these products:[177]



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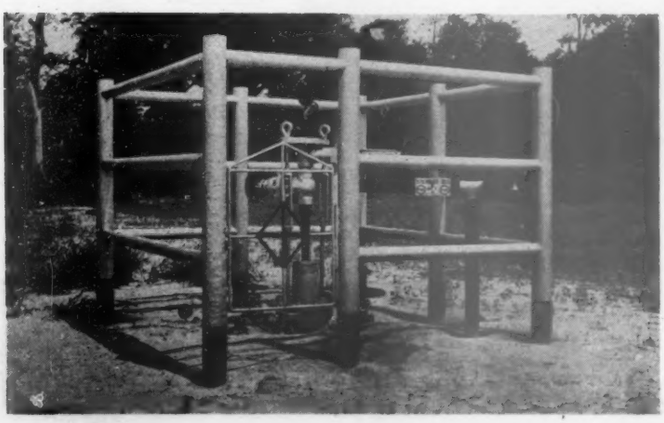
Operating Ideas

Trip Board for Blowout Preventer Insert

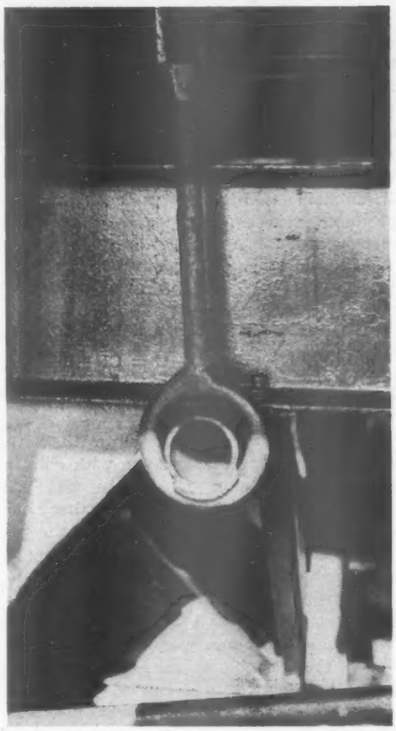
The insert for the blowout preventer must be kept ready for quick application in the preventer bowl at all times if the crew and rig are to be safe while drilling in a high-pressure area. Here is the method used by one drilling crew. It consists of a board with notches in it placed between the pins provided for handling the insert. When the insert is swung against the drill pipe, the board is knocked out and the insert closes around the pipe. The insert is swung from a light wire line so that it is always in position for quick attachment to the drill pipe. In such position it is easily inspected and is kept reasonably free from mud.

Guard Prevents Christmas Tree Damage

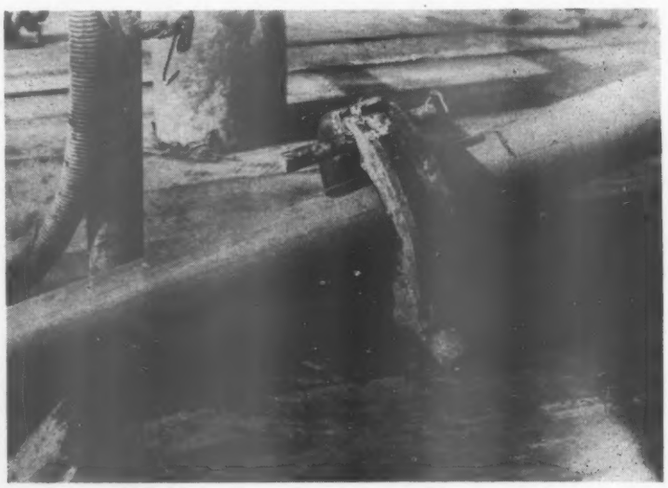
Well connections located in creek bottoms which are frequently inundated must be protected from drift wood if they are to escape damage during flood periods. The stockade shown is used around wells in the Cumberland field in Oklahoma where the Washita River frequently goes on a rampage. The guard is built from old pipe, the height of the guard depending on how high the water gets at that particular point. The gate is always located on the downstream side of the stockade.



Locking Dog Saves Rigging-Up Time



The tie-down of the drilling engine is frequently accomplished by the use of turnbuckles with eyes in the lower end through which the ends of a piece of pipe project. Unless the pipe is cut extra long, there is always trouble with the pipe slipping out of the eyes while rigging up. One drilling contractor employs the method shown for using a short length of pipe and still keeping it from slipping out while rigging up, or vibrating out while drilling is in progress. A heavy lip is built on the lower side of the pipe to prevent any sideward travel. To remove the pipe it is only necessary to loosen the turnbuckle sufficiently to permit the pipe to be turned 180°. If additional strength is required at the end, it may be necessary to put a welded disk in the pipe. This method is considered preferable to having a long pipe protruding through the eye of the tie-down as the protruding pipe usually is in the way of crewmen moving about, and is exposed to blows and possible damage.



Safety Clamp for Drill Collar

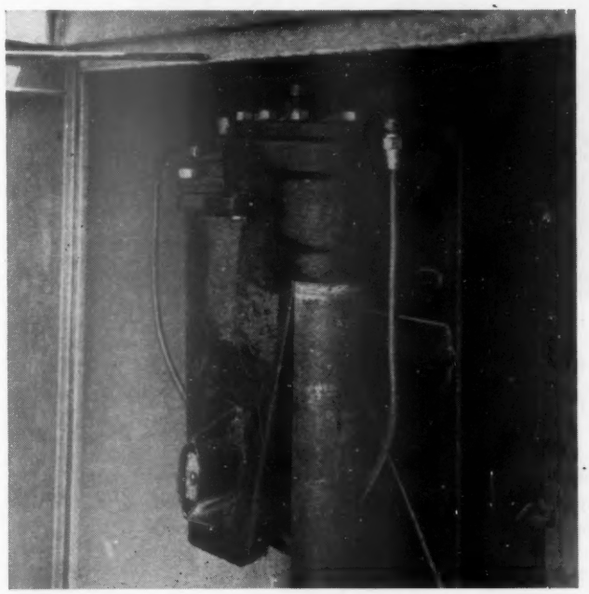
One of the most pressing fears on a drilling rig is the possibility of dropping a drill collar through the rotary while preparing to run it in the hole. This is due to the fact there is frequently no offset on the drill collar which positively insures that the slips will grab it and prevent it from falling through the rotary table. The special slip-type clamp shown is used to prevent such an accident. When the drill collar is lowered into the hole, the clamp engages the slips in the rotary bowl and forces them downward so they grip the drill collar. Even if the slips fail to hold, the drill collar cannot fall through the rotary table due to the clamp on it.

Refinery IDEAS

. . . that save $ $ $

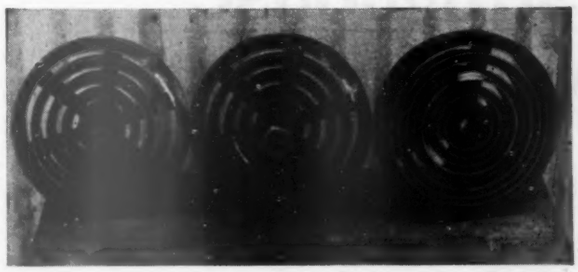
Lock and Shield Stop Theft of Mercury

The loss of mercury from meters and indicating instruments became a serious expense among certain plants as the value of the material increased due to the war. One company solved a major share of its problem by installing a steel shield over the mercury reservoir of each meter and locking it in place by means of a modified padlock. The shield at the left fits tightly against the steel castings along its upper edge and is held in place by means of a stud bolt which is screwed into the casting and extends down inside the sleeve. The arms of the lock engage the bolt and keep it from turning when the lock is in place.



Braised Surfaces on Compressor Valves

The efficiency of a compressor was badly reduced in time by the wear of fine particles of sand dust accompanying the gas. The usual precautions were early taken to catch the dust and before processing the gas, but in time the wear on the valves becomes sufficiently bad that something had to be done. The plant welder decided to braise the valve surfaces with a suitable rod and then grind and polish down the surface to match. The finished valve surfaces are shown here. The operation was carried out in less than a day and metal was conserved in addition to the sime saved.



Chill Oil Samples By Expanding Propane

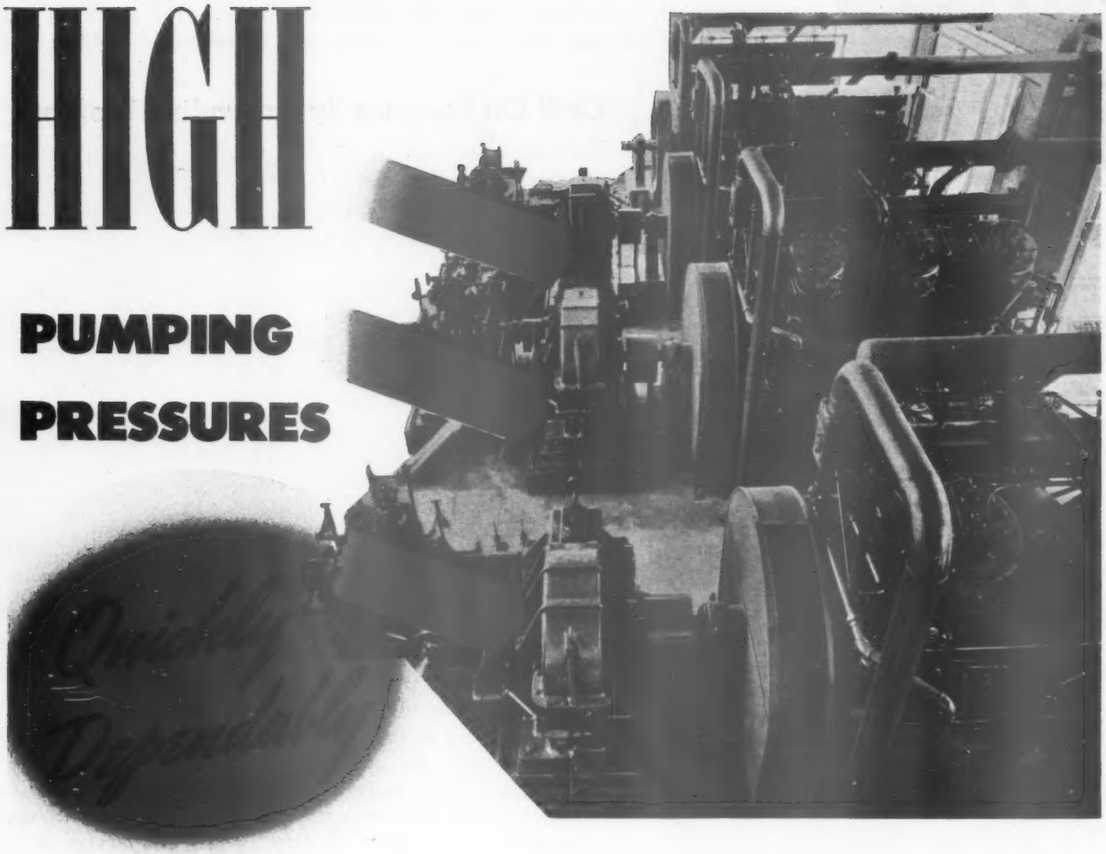
To hasten the control in processing heavy distillates, a pour-point chilling unit has been erected in the control room of a refinery in lieu of taking all samples to the plant laboratory. The chilling equipment includes a steel drum, which is large enough in diameter to permit 10 closed, tubular bottle holders to be suspended through the horizontal plate closing the upper edge of the drum. These holders are short pipe nipples, each welded closed at the lower end and welded through a hole in the upper plate in a manner so as to completely seal the drum. The samples of oil are distributed among the suspended holders and propane is allowed to expand inside the drum. It is exhausted from an outlet at the bottom. The drum is insulated to conserve the quantity of propane needed to effect the desired cooling. A valve in a ½-in. feed line controls the flow of propane through the drum. Here the receptacle is indistinctly shown but some idea can be gotten from the dimensions and arrangement of the bottle holders. The location did not permit the use of a flashlight exposure.

Air Inlet Adjusted Along Side of Boiler Setting

Ordinary field boilers are becoming more and more common in plants requiring substantial quantities of steam. In the boiler installation shown in the accompanying picture, use is made of the side openings in the base of the setting of such a field boiler in order to vary the quantity of air introduced into the combustion chamber. The movable plate used outside the setting was cut from scrap. It was carefully marked off to give a maximum opening when set in one position, and to provide practically no opening when set in the opposite position. The steel plate in the boiler setting was also cut to allow the same openings. The two were joined by the two strap irons which were built up from the frame to permit the sliding plate to operate freely but still maintain a reasonably tight fit. Stops were welded on the two ends to keep the movable plate from being pulled beyond a maximum position, the maximum being an opening pulled to one side and entirely closed when pulled to the opposite side.

HIGH

PUMPING PRESSURES



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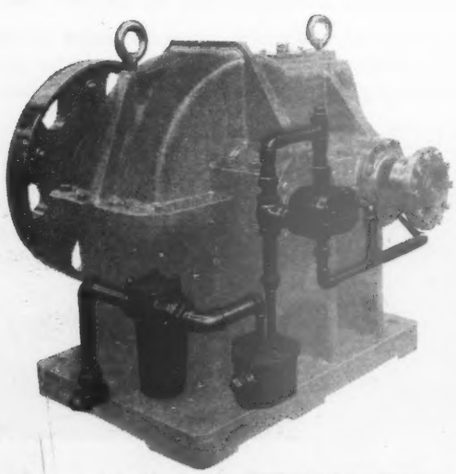

Phantom view of Westinghouse Type SU Speed Increaser unit showing oil pump, cooler, strainer and oil lines. All parts are external and easily accessible. Oil is continuously strained and cooled, preventing introduction of foreign matter into gear case.

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GEARED DRIVES

Eastern Plant Cooperates With Plant-Protection Authorities

WARTIME protection of petroleum facilities is a subject of major importance to the oil industry today. Cooperation with the Army, Navy, Coast Guard, Office of Civilian Defense, Office of Petroleum Coordinator and the Federal Bureau of Investigation is the keynote in a program which is costing the industry at least $1,000,000 a month. An example of the industry's cooperation with the federal plant-protection authorities is the program adopted by Atlantic Refining Co. at its Philadelphia refinery. This company superimposed its air-raid and antisabotage precautions on an already efficient fire protection and plant-guard system to develop an effective wartime organization.

Since the air-raid precautions represent the most drastic departure from normal plant protection activities, they are covered first in this highly skeletonized description of Atlantic's plant. The company's Point Breeze refinery covers an area of some 700 acres and employs approximately 3,000 men. With so large and concentrated an area to protect, it was desirable to arrange for immediate receipt of air-raid signals and accordingly direct connections were established with the Army's Interceptor Command. These signals are relayed to all sections of the plant on all fire-alarm bells and the small plant telcall horns. The first signal denotes an alert and the second an actual raid. Steam whistles and sirens sounding for 2 minutes deliver the "all clear" signal.

The entire refinery is divided into 26 sectors. This sectionalized system had been adopted earlier as a fire-protection measure. Now each section has an air-raid warden and an assistant warden for each 8-hour shift, a total of 156 wardens in all. Each warden is required to familiarize himself with location of switches controlling all exposed lights and with location and use of incendiary-bomb extinguishing equipment.

Three types of extinguishing units have been adopted. One consists of a 50-gal. drum filled with dry sand, a 5-gal. bucket and a scoop shovel; the second of a 5-gal. bucket filled with dry sand and a scoop shovel, and the third a Hudson-Sterling sprayer filled with 3½ gal. of clear water. More than 400 of these units have been distributed throughout the plant. Altogether there are 384 of the No. 1 units, 9 of the No. 2 and 31 of the No. 3 type. Ladders have been installed where roofs cannot be reached by other means. In addition to the above equipment 30 stirrup pumps and 5-gal. bucket units have been installed at various points.

Each separate department also has its individual air-raid organization which operates under the person in charge of the department. Duties of these organizations include extinguishing lights, drawing shades, shutting down units, etc. Not all units will be shut down since this action would result in a greater hazard than actual bombing. The duties of these groups vary with the departments and the buildings in which they are housed and are designed in accordance with their special requirements. Shelter areas are prescribed for each department.

Guards are on duty at all hours at the refinery's eight gates. In addition to checking the identity of both visitors and employes, they are required to check the condition of all fences which surround the property and the passes of all vehicular traffic, whether the vehicles are loaded or not. Employes and visitor must be identified with badges before entering the refinery or yard. Not only are no persons allowed in the plant without the badges but visitors are admitted only when they have been met at the gate and escorted.

First-Aid System

These air-raid and antisabotage precautions are supplemented by a first-aid system that has been expanded to take care of any possible emergency. In the event of an emergency, one man, identified by an arm band, takes charge at each of the 14 regular and emergency first-aid stations. All trained first-aid men report to the nearest station and one of the 39 men with advanced first-aid training takes full supervisory charge. There are approximately 300 other men, equally divided among the three shifts, who have completed standard training and are eligible to man the stations. In addition to this group there are 1,328 men trained in artificial respiration. Besides the fully equipped first-aid stations, there are 5 ambulances, 1 regular and 4 auxiliary, 43 emergency fire blankets and 50 stretchers and wool blanket units, etc., located at various points.

The fire-fighting system at Atlantic's refinery is outstanding among industrial concerns. Supplementing its regular equipment are 16 trailer fire pumps which are unique in industrial fire protection here. These units are equipped with 20 ft. of 4-in. suction hose for taking water from the river, and 200 ft. of 2½-in. fire hose. They can be taken to the scene of an emergency by any car equipped with a rear bumper to which are attached by a clamp. These units deliver 400 g.p.m. and, by using two in series, can deliver 350 g.p.m. 1,200 ft. from the water supply.

As previously mentioned, a sector system has been adopted for fire fighting. Signals may be turned in from 93 fire-alarm pull boxes. Depending on the sector from which the call originates, one to three of the company's eight fire trucks respond. If more than one alarm is sounded from one sector, more trucks respond. As the trucks leave the stations, others are assigned to cover up the vacancies in the manner of metropolitan fire departments. This is done on a prearranged schedule with no confusion. The equipment is manned by men who have completed the company's six-lesson, 12-hour course in fire fighting. This course has been taken by 26 air wardens and their assistants, 26 auxiliary fire chiefs and their assistants, approximately 350 foremen, the personnel of laboratories, 75 research chemists and 28 tank-truck supervisors.

Besides the 8 fire trucks and 16 trailer pumps, there are 14 hose houses, each housing a fully equipped hose carriage. There are almost 800 50-ft. sections of 2½-in. and 1½-in. hose on the trucks, carriages and more than 100 stationary reels. Twenty-two stationary, 5 tug, 3 truck and 16 trailer pumps have a combined capacity of 40,000 g.p.m., and there are five additional portable steam pumps available. The 480 hydrants provide readily accessible sources of water which may be augmented by the trailer pumps from the river, tanks, etc. More than 130,000 lb. of foam powder are immediately available and besides the existing foam-transportation equipment, there are 10 roller skid boxes each holding sixty-four 40-lb. powder cans which one man can load on a truck for speedy replenishing of powder supplies at the scene of the fire. Other foam equipment includes 5 foam towers and 14 generators.

Top: Fifteen trailer pumps, with portable lighting unit in front. Bottom: Fire-fighting equipment is manned by men who have taken a special course

QUESTIONS ON TECHNOLOGY

By W. L. NELSON, Technical Editor

Oxidation and Sludging Of Hydraulic Oils

In using distillate-type oils in hydraulic torque converter equipment we find difficulty with sludging and oxidation. What tests may be used to determine such characteristics for our oils?—J. B. N.

The oxidation or sludging of oils intermediate between lubricating oils and gasolines, has not been a widespread difficulty and hence standard tests have not been developed. Specifications for lubricating oils, recoil oils, gyroscope oils, etc., do not call for such tests except perhaps the neutralization number which is only remotely related to the oxidation characteristics of the oil. In some instances, so-called "work tests" by which the oil is used in a machine for a long length of time have been employed but such tests are not directly related to the problem of sludging.

Oxidation tests for lubricating oils such as the new Indiana Stirring Oxidation Test (Symposium of the Pet. Sect. of the Am. Chem. Soc. on Analytical Methods, April 1941 meeting at St. Louis) operate at temperatures that are too high for distillate-type oils. The potential gum tests for gasoline might be more satisfactory except that extremely long periods of test might be required in order to show a sizable sludge formation. Modifications of these tests involving a series of tests for different lengths of time would probably be useful in evaluating hydraulic oils.

100-Octane Content of Crude Oils

In the usual procedures of making 100-octane gasoline, how many gallons of this grade can be made from 1 bbl. of crude oil? How many gallons of 91-octane gasoline can be made from 1 bbl. of crude?—P. H. P.

Although a direct answer can be given to your questions, the situation is so complicated that an examination of more complete discussions is recommended. Some such discusion in recent issues of The Oil and Gas Journal are: Page 38, January 8, 1942; Page 14, January 1, 1942; Page 63, December 25, 1941; and Page 165, June 25, 1942.

One-hundred-octane-number gasoline is not usually made from crude oil alone, and hence the following tabulation indicates the basic ingredients required and the approximate amounts of each to make 1 bbl. of finished 100-octane gasoline, by four different methods:

	Bbl.
1. Natural gasoline	3.0
Regular crude oil	1.75
Total	4.75
2. Gas oil (400°-700° F.)	2.5
3. Regular crude oil	7.0
4. Natural gasoline	4.2
High-octane crude oil	1.3
Total	5.5

It should be noted that in all of the instances large amounts of byproducts are produced that are valuable and useful; that attempts to convert crude oil or any other stock bodily into 100-octane gasoline is not feasible from an energy (or material) consuming or cost standpoint.

In the case of 91-octane gasoline, the specifications of this material are such that it must substantially be a straightrun product obtained by the simple distillation of crude oil. This makes the yield a direct function of the properties of the crude oil. Most crude oils contain no straightrun gasoline that is suitable for 91-octane gasoline, but a minor percentage of our crude oils (about 10-12 per cent) are asphaltic or naphthenic in their characteristics and these crude oils contain 91-octane gasoline. Most of these high-octane crude oils contain sulfur in such large quantities that the gasoline from them must be catalytically desulfurized in order to meet the specifications. Unfortunately, such crude oils contain only small amounts of gasoline and hence the yields of 91-octane base stock or gasoline are very small, ranging as low as 1.5 per cent of the crude oil and probably not averaging over about 10 per cent. This corresponds to about 10 bbl. of crude oil to produce 1 bbl. of 91-octane gasoline. It is interesting to note that a few crude oils, primarily some found in Montana and Wyoming, are almost 100 per cent pure 91-octane gasoline. Surveys of the crude oils of the United States indicate that only 150-200 different crude oils are truly suitable for 91-octane gasoline manufacture.

Simplified Flow Diagrams

Higher Alcohols, Solvents, Etc., From Petroleum

We have been thinking of how the chemical industry may affect our refinery-expansion plans and have among other things been considering the manufacture of lacquer solvents, etc. What is involved in the manufacture of these?—P. L. F.

At the present time the activities of Sharples Solvent Corp., and others, in the manufacture of solvents is successfully taking care of the market, but great expansions of such manufacturing facilities may be justified in the future if the use of plastics and similar materials increase greatly.

The manufacture of the higher alcohols can be well illustrated by amyl alcohol. In general, the higher alcohols and acetates are produced by the chlorination of the normal paraffin hydrocarbons, hydrolysis to produce alcohols, and treatment with acetic acid to produce acetates, as indicated for the amyl products by the following chemical equations:

$$\underset{\text{pentane}}{C_5H_{12}} + \underset{\text{chlorine}}{Cl_2} = \underset{\text{amyl chloride}}{C_5H_{11}Cl} + \underset{\text{hydrochloric acid}}{HCl}$$

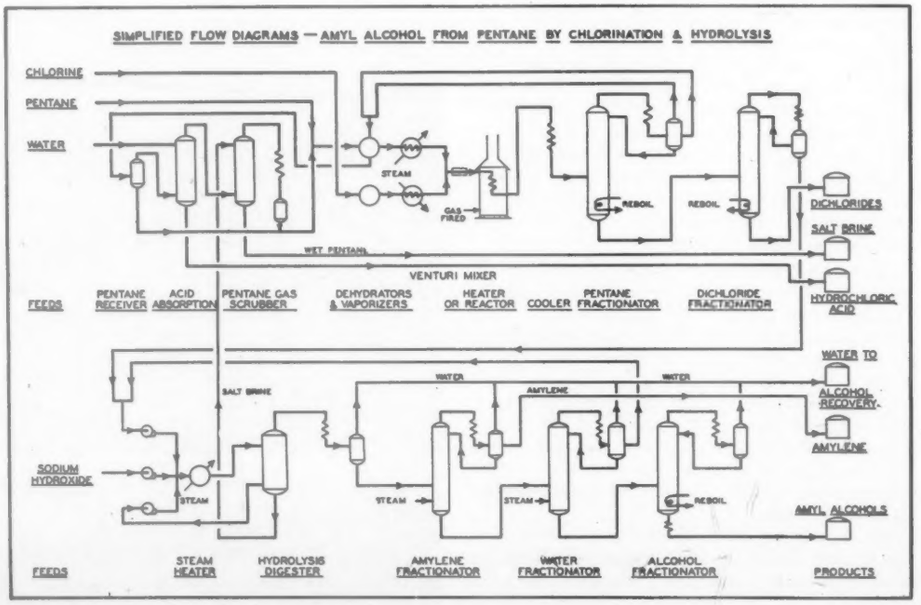
$$\underset{\text{amyl chloride}}{C_5H_{11}Cl} + \underset{\text{sodium hydroxide}}{NaOH} = \underset{\text{amyl alcohol}}{C_5H_{11}OH} + \underset{\text{sodium chloride}}{NaCl}$$

$$\underset{\text{amyl alcohol}}{C_5H_{11}OH} + \underset{\text{acetic acid}}{CH_3COOH} = \underset{\text{amyl acetate}}{CH_3COOC_5H_{11}} + \underset{\text{water}}{H_2O}$$

These reactions are by no means the only ones which take place because di- or poly-chlorides as well as many isomeric pentane products are possible if the feed stock is not pure normal pentane.

The general flow is indicated in the diagram on this page. Dry chlorine and dry pentane are vaporized by steam heaters and passed through a high-velocity ventura nozzle for thorough mixing. The mixture is heated and allowed to react for about 2½ seconds at 500° F. The unused pentane, hydrochloric acid, and dichlorides are separated in two fractionating towers and the monochlorides are digested with sodium hydroxide for the production of alcohols. This mixture consists of small amounts of amylene and water (saturated with the alcohols) as well as the amyl alcohols and hence an elaborate fractionating system of two or three towers is required for the separation of pure dry amyl alcohol. In the initial chlorination reaction, hydrochloric acid is produced and this along with unused pentane is sent to the original pentane dehydrator and through an HCl absorption and salt scrubber system for the recovery of hydrochloric acid and the removal of salt. The acetylation operation is not shown in the flow diagram.

The higher alcohols such as the propyl, butyl, and amyl alcohols or acetates are used extensively in the lacquer and varnish industries. Formerly these industries were served by fusel oil which is a byproduct of ethyl (or grain) alcohol manufacture but the amount of fusel oil is not adequate. Most asphalts, resins, tars, pitches, rosin, and many plastic materials are soluble in such solvents but shellac is not.



CO$T Engineering

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL

PRIME MOVERS

SEPTEMBER 3, 1942

PROPER ENGINE SIZES SAVE FUEL

FUEL economy in the operation of gas engines in oil-well pumping can be increased greatly by the use of engines of proper size. Too many times engines are provided that are not adaptable in size to the requirements imposed on them. It has been found that many engines have been selected purely to correspond with the horsepower rating of the pumping unit without particular regard to expected pumping loads or adaptation of the engines to these loads. In such cases it has been the tendency to provide engines of more than ample power capacity. One of the results of this is that fuel economy is greatly decreased.

A little practical information on engine capacities and operation, calculation of pumping loads and adaptation of engines to these loads will assist operators to determine the most suitable size and type of engine for a particular duty. By this, not only will more effective use be made of the engine power, but waste-fuel consumption will be minimized, and more efficient operation generally will be realized.

The principal factors to consider in selecting a gas engine are speed (revolutions per minute or piston speed) and horsepower output.* Piston speed is expressed in feet per minute and is determined from the product of the stroke in inches times 2 times revolutions per minute, divided by 12. Most gas-engine manufacturers rate the horsepower of their engines when piston speed is 1,000 ft. per minute. Under certain conditions, particularly when the period is not long, the speed may be increased. However, when load and speed are fairly constant over a long period of operation, as in pumping, the piston speed can be reduced to advantage.

Horsepower of an engine varies practically in direct proportion to the speed. Consequently, to operate an engine at too low speed increases the first cost per horsepower of the engine, as there is waste available horsepower.

A gas engine obtains its power from the expansion of the products of combustion, produced by the burning of the fuel in the combustion chamber or cylinder of the engine. The more fuel burned, the more power developed. The heat supplied to a gas engine as fuel is balanced approximately as follows:

	Per cent
Useful work	25
Friction	7
Jacket water	30
Exhaust	35
Radiation	3
	100

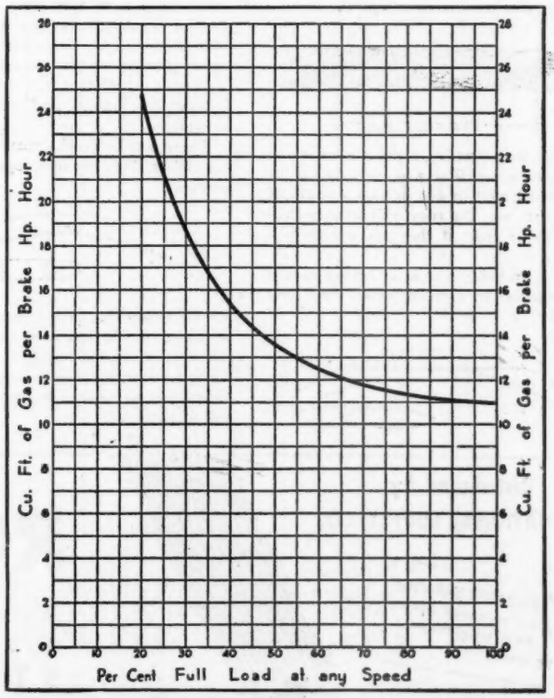
There is a limit to the amount of heat an engine can dissipate and the horsepower output is dependent upon this factor. All the heat going out the exhaust passes through the exhaust valves, and the more heat that passes through the valves, the hotter the valves become. If the allowable limit is exceeded, by burning of excess fuel, the valves burn and require attention or replacement, thus adding to costs of operation.

The intensity of effort exerted by an engine operating at a given speed carrying a given load is expressed in terms of mean effective pressure in pounds per square inch. The horsepower output, the mean effective pressure, and the heat that must be dissipated vary in direct proportion to each other when an engine is operated at constant speed.

The average gas engine is able to carry its load satisfactorily if the engine does not have to operate over 75 lb. per sq. in. of mean effective pressure, although better service might be expected if the mean effective pressure does not exceed 70 lb. per sq. in.

For most efficient service it generally is recommended that the engine have a rating capacity of not over 70 lb. per sq. in. mean effective pressure and 900 ft. per minute piston speed for constant load, continuous operation, and for constant load and intermittent operation a rating of not over 70 lb. per sq. in. mean effective pressure and 1,000 ft. per minute piston speed.

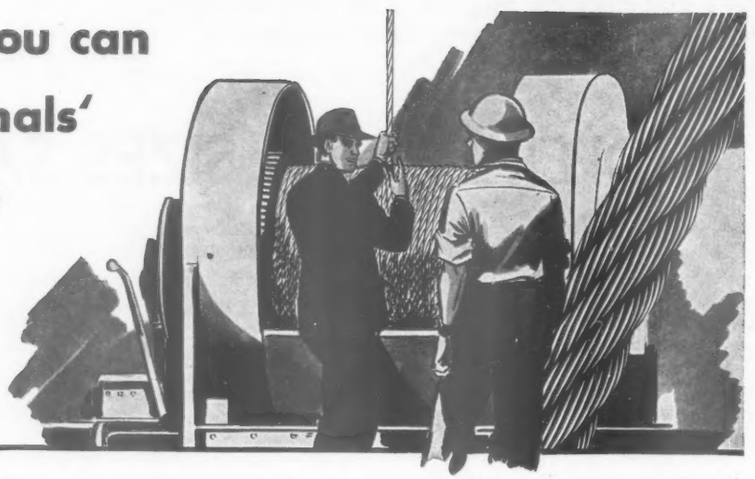
For further information for efficient adaptation of gas engines to oil-well pumping see Producing Equipment Directory, 1940-41 edition, Pages G-13-26 and J-19-44.



Fuel consumption in relation to load factors for multicylinder gas engines fully equipped with accessories and using 1,100 B.t.u. gas

*Producing Equipment Directory, 1940-41 ed., p. G-13.

"Here's how you can spot the 'criminals' that steal wire rope life...



Look for them regularly... to save your time and money... and America's steel

"IF YOU WANT to get every hour of safe service that's built into your ropes, tell your maintenance men to get up on the rigs regularly... up where the wire rope operates. Tell them how to inspect it... how to look for the clues to what is damaging your wire rope and how to establish *your own standards* for deciding when it's necessary and economical to replace your wire ropes.

As a first step, tell them a rope should be judged by the condition of the most severely damaged lay... one rope lay being that length of rope in which one strand makes one complete revolution around the rope...

To select the worst lay, make a counting of the broken wires. Watch to see if the breaks are concentrated in one or two strands. If this is the case, the rope will be considerably weaker than if they are evenly distributed.

You'll probably find some breaks caused by *Abrasion*. In extreme cases they look like this...

and even when not worn through, any removal of metal due to wear weakens the rope in direct proportion. Abrasion breaks occur most frequently where rope goes over sheaves and drums.

There may be breaks caused by *Fatigue* which look like this...

and occur where the rope has been bent around too small a radius too often or has been subject to vibration or whipping. Fatigue breaks also occur after the wire has been damaged by *Corrosion* which shows up as pitting on the surface of the wire. Improper lubrication is to blame and contributes to tension and abrasion breaks as well.

There may be breaks caused by *Mechanical Abuse*. This cut or gouged wire is one example...

Careless handling during installation or an accident on the job may cause cut wires like this or mashed wires... with flattened or spread ends. Mechanical abuse sometimes may so weaken the wire that it will fail in tension.

Finally, if there are breaks caused by *Tension* they will look like this...

And will show one side of the broken wire cupped and the other coned. Tension breaks are always caused by an overload on the wires, which may or may not have been weakened by abrasive wear, by corrosion, or by mechanical abuse. When tension breaks are found, it is usually obvious that the rope is unfit for further duty and in any event should be discarded.

As a last step, have a record kept of the condition and the service life of each wire rope, cut out the worst section when the rope is taken off and send it on to the manufacturer for an ultimate strength test. This will complete your inspection record and form a basis for future inspection and condemnation decisions.

In this way, you'll be on the way to getting the maximum useful rope life built into every inch of Roebling "Blue Center" Steel Wire Rope—without taking chances on untimely and dangerous breakdown of equipment vital to wartime production schedules."

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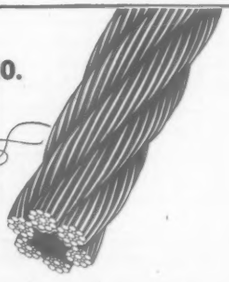


ROEBLING
"Blue Center"
STEEL WIRE ROPE
PREFORMED OR NON-PREFORMED

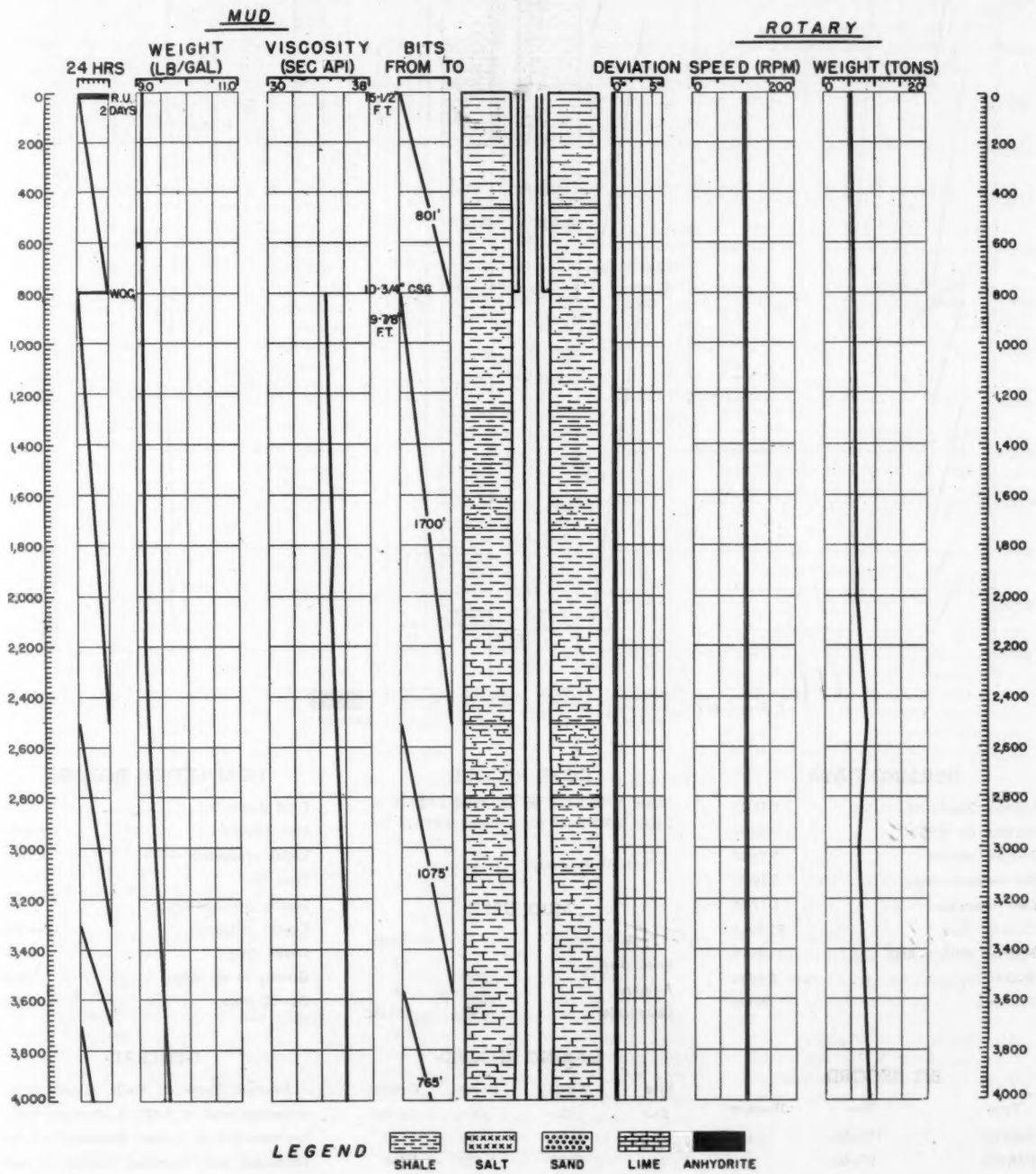
Journalog

A FEATURE OF THE OIL AND GAS JOURNAL
SEPTEMBER 3, 1942
No. 15

HOUSTON DRILLING CO. 1 J. E. HARMON — COMPANY RIG

Morris & Cummings Survey, 2 miles southeast of Ganado Field

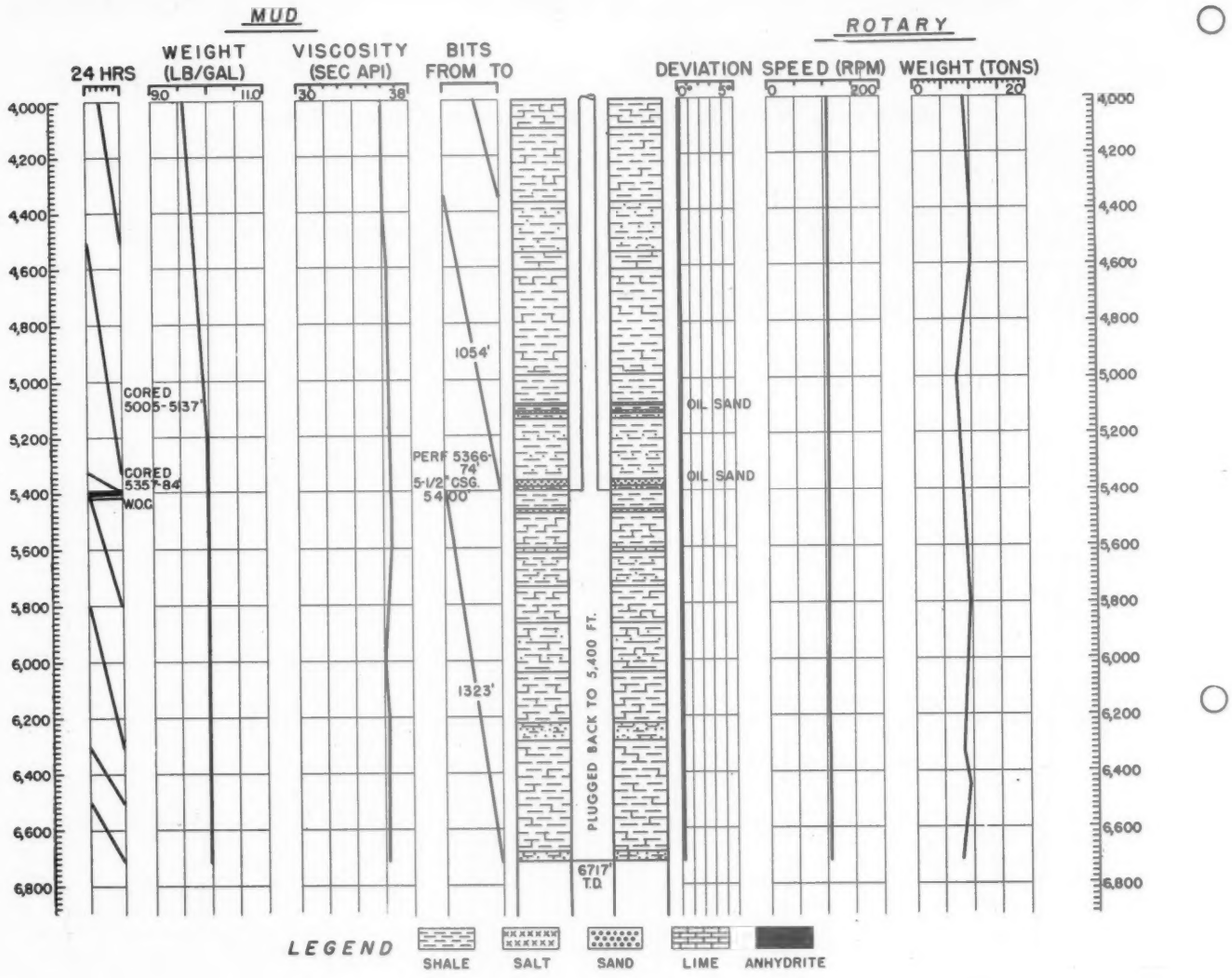
Discovery Well, Harmon Fi eld, Jackson County, Texas



(Continued on Next Page)

Journalog

Discovery Well, Harmon Field, Jackson County, Texas (Continued)



DRILLING DATA

Started rigging up	3-26-42
Rigging up rotary	2 days
Drilling started	3-28-42
Set surface casing	3-29-42
Date completed	4-17-42
Over-all time	20 days
Elapsed drilling time	11 days
W.O.C.	4 days
Type rig	Steam

BIT RECORD

Type	Size	Number
Fishtail	15½-in.	1
Fishtail	9⅞-in.	5
Core bit	6¾-in.	1

CORE RECORD

Cored 5,005-5,137 ft.; oil sand 5,090-95 ft.
Cored 5,357-5,362 ft.; oil sand 5,357-84 ft.*

*Last 10 ft. shaly.

MUD USED

Type—	No. sacks
Spud clay	25
Aquagel	6
Chemicals	200 lb.

CASING RECORD

Size (in.)	Weight (lb.)	Depth (ft.)	Cement (sacks)
10¾	32.75	788	350
5½	15.00	5,400	550

(2½-in. tubing set for well completion)

COMPLETION RECORD

Total depth (ft.)	6,717
Perf. casing	5,366-74
Initial production (bbl.)	104
Time (hr.)	24
Tubing pressure (lb.)	340
Casing pressure	Sealed
Choke (in.)	5/32
Gravity of oil (deg.)	28.8
Gas-oil ratio	400-1

GENERAL

Average depth of wells drilled since discovery well is 5,400 ft. Average drilling time is 6 to 7 days. Average time for completed well, including rigging up and moving off, is 15 days.

Engineering Fundamentals

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL No. 36

SEPTEMBER 3, 1942

HEATING VALUE BY GAS ANALYSIS

As a part of the consideration of the operation of oil-field steam-generating plants, it is necessary that one be familiar with the meaning, determination and use of the heating value of boiler fuels. Since natural gas is possibly the most desirable fuel for boilers when it is available, and since it is generally available at relatively low price ranges in most oil fields, its use as a boiler fuel will be given preference in this discussion over other types of fuel.

Gross heating value, total heating value, and higher heating value are synonymous terms referring to the number of B.t.u. per standard cubic foot that a gas will produce when saturated with water vapor and burned, the products of combustion being cooled to the initial temperature of the gas and air used in the combustion, and all water formed by the combustion being condensed to the liquid state. Standard conditions generally specified for the measurement of the standard cubic foot of gas are: a temperature of 60° F., and a pressure equivalent to that exerted by a 30-inch mercury column at 32° F. Heating values given in B.t.u. per cubic foot for any other set of pressures and temperature conditions should be qualified by stating the standard conditions used as a basis for gas measurement.

Net heating value, lower heating value, and available heating value are synonymous terms which refer to the number of B.t.u. produced by the combustion of 1 standard cu. ft. of gas as defined for the gross heating value except that the water formed by combustion remains in the vapor state.

It is seen that the net heating value is less than the gross heating value by an amount equal to the latent heat of vaporization of the water formed in the combustion of the gas.

The net heating value is in common use in Great Britain and in most foreign countries. In this country, the gross heating value is more universally accepted, and its use is recommended by the American Society of Mechanical Engineers. In many computations, however, net heating value is the more appropriate.

To justify from a theoretical standpoint the use of gross heating value for calculating the efficiency of an apparatus, such as a steam boiler, it appears logical to charge against that apparatus the amount of heat that would be secured from the fuel if the apparatus were so theoretically perfect as to condense all the water vapor formed by the combustion process. This seems to be a justifiable basis, since the efficiency of equipment is based upon the performance of a theoretically perfect machine.

The heating value of a fuel may be determined either by calculations based on the analysis of the fuel, or by actual measurement of the heat evolved during combustion in a calorimeter.

The heating values of the pure chemical compounds which compose natural gas has been definitely determined by calorimetric tests and are available from numerous sources. The gross and net heating values of various components of natural gas are given in Table 1.

TABLE 1—GROSS AND NET HEATING VALUES OF COMPONENTS OF NATURAL GAS

(B.t.u. per cubic foot at 30 in. of mercury abs. pressure and 60° F.)

Component—	Molecular formula	Gross heating value	Net heating value
Methane	CH_4	1,004	913
Ethane	C_2H_6	1,773	1,635
Propane	C_3H_8	2,518	2,334
Ethylene	C_2H_4	1,589	1,497
Benzene	C_6H_6	3,729	3,591
Carbon monoxide*	CO	322	322
Carbon dioxide	CO_2	Not combustible	
Nitrogen	N_2	Not combustible	
Helium	He	Not combustible	

*Not commonly found in natural gas, although present in some manufactured gas. Could possibly be in natural gas due to contamination.

Example 1.

Problem.—A certain natural gas has the following volumetric analysis:

Component—	Per cent by volume
Methane (CH_4)	62
Ethane (C_2H_6)	17
Propane (C_3H_8)	6
Carbon dioxide (CO_2)	5
Nitrogen (N_2)	10

Calculate the higher heating value and the net heating value of the gas in B.t.u. per cubic foot at 30 in. of mercury abs. pressure and 60° F.

Solution.—Take 1 standard cu. ft. of the gas as a basis for calculation. Then, the per cent by volume of each component when expressed as a fraction will represent the fractional part of a cubic foot of that particular component in the 1 cu. ft. of natural gas.

The calculation, then, merely consists of calculating the amount of heat that would be released, during complete combustion, by the fraction of a cubic foot of each pure compound making up the gas. The sum of these values is the heating value of the gas.

The following tabulation shows the calculation to determine gross heating values of the given natural gas (1 cu. ft. as a basis):

Component—	Cu. ft.		Gross H.V.		B.t.u./cu. ft.
CH_4	0.62	×	1,004	=	622.48
C_2H_6	.17	×	1,773	=	301.41
C_3H_8	.06	×	2,518	=	151.08
CO_2	.05		....		.....
N_2	.10		....		.....
Gross heating value					1,074.97

The net heating value is calculated similarly as follows (1 cu. ft. as a basis):

Component—	Cu. ft.		Net. H.V.		B.t.u./cu. ft.
CH_4	0.62	×	913	=	566.06
C_2H_6	.17	×	1,635	=	277.95
C_3H_8	.06	×	2,334	=	140.04
CO_2	.05		....		.....
N_2	.10		....		.....
Net heating value					984.05

Example 2.

Problem.—Calculate the gross and net heating values of the gas given in Example 1 in B.t.u. per cubic feet if the standard conditions used for gas measurement are 14.4 lb. per sq. in., abs., and 80° F.

Solution.—A pressure of 14.4 lb. per sq. in. is equivalent to a pressure of 14.4/0.491,* or 29.3 in. of mercury.

Applying the law of perfect gases (see Installment 10), calculate the volume of gas at 30 in. of mercury, abs., and 60° F. that is equivalent to 1 cu. ft. at 29.3 in. of mercury and 80° F. This calculation follows (subscript 1 refers to standard conditions of Example 1, subscript 2 to standard conditions given in this problem):

$$V_1 = \frac{V_2 P_2 T_1}{P_1 T_2} = \frac{(1)(29.3)(60+460)}{(30)(80+460)}$$

$$= 0.94 \text{ cu. ft.}$$

Then 1 cu. ft. of the gas at 29.3 in. of mercury abs. and 80° F. would occupy only 0.94 cu. ft. at 30 in. of mercury and 60° F. Thus, 1 cu. ft. would have a heating value equal to 94 per cent of the heating value at the conditions of Example 1.

So, at 29.3 in. of mercury and 80° F.,

Gross heating value, B.t.u. per cu. ft. = 0.94 × 1,074.97 = 1,010, and

Net heating value, B.t.u. per cu. ft. = 0.94 × 984.05 = 925.

*0.491 is a conversion factor representing the equivalent in pounds per square inch to 1 in. of mercury. See Installment 1.

Series prepared by Glenn M. Stearns, associate professor of petroleum engineering, University of Oklahoma

FOR Formica, as for many other companies, the essential task right now is to supply the front with war materials. Everything we have is going into that and it will continue to be our big job for the duration.

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FORMICA

REFINERY ACTIVITY AND EXPANSION

Pure's Texas Refinery To Produce Flexon

NEDERLAND, Tex.—Pure Oil Co., operator of a large refinery here, commonly known as the Smith's Bluff plant, soon will start production of Flexon, a first cousin of butyl rubber.

Refinery gases, including a large percentage of isobutylene, will be the charging stock. Conversion of isobutylene and a small amount of diolefin to Flexon is accomplished at low temperatures attained as an emergency measure by the use of dry ice.

The new Flexon plant at the Pure refinery here will be placed in operation about the middle of this month.

Alkylate Plant to Be Built At Imperial Refinery

CALGARY, Alta.—The Allied War Supply Corp., backed by the British, United States and Canadian governments, has commenced construction of a plant on the Imperial Oil, Ltd.'s refinery property in East Calgary, to produce alkylate. The plant is part of a larger project which Imperial Oil and British-American Oil Co. are working out in conjunction with the government agency, for the more extensive production of aviation gasoline in Alberta.

The alkylate plant in East Calgary will obtain butylenes from refinery gases, and in Turner Valley another plant will extract isobutane from natural gas. Imperial Oil and British-American both have been producing aviation gasoline of 80 to 100 octane, but the new development will increase the output of this product, and at the same time eliminate the need for importing alkylate and other ingredients through the production, largely from waste gas, of these constituents.

The East Calgary alkylate plant will cost approximately $1,000,000; and, if essential materials can be obtained, it will be in operation this winter.

Chicago Refineries Settle Labor Dispute, Resume Work

Operations were resumed late last week at three of East Chicago's large refineries after a brief strike interruption. Approximately 2,350 employes were involved in the strike at three plants called August 25 by the CIO Oil Workers Union Local 210.

Refineries involved were those of Socony-Vacuum Oil Co., Inc., Cities Service Oil Co. and Sinclair Refining Co. Workers at the Shell Oil Co., Inc., Calumet loading terminal struck at the same time. The union demanded a flat increase of 10 cents per hour over previous wages which ranged from 80 cents to $1.46 per hour.

Employes at the four struck operations were granted an increase of 5.5 cents per hour.

Some 4,700 employes of the Standard Oil Co.'s refinery at Whiting, Ind., received a similar wage boost.

Chester Barter, president of the Whiting local of the Standard Oil Employes Association, an independent union, said the increases were added to scales ranging from 90.5 cents to $1.62 an hour. The Standard oil workers did not strike.

Striking employes of the other companies returned to work after a federal conciliator told them stoppage of high-octane gasoline production was a "critical threat" to the war effort.

Gulf Lengthens Work Week at Port Arthur, Tex., Refining

PORT ARTHUR, Tex.—Due to the general shortage of labor, employes of Gulf Refining Co.'s refinery here have been placed on a 40-hour workweek. They have been on a 36-hour week since NRA days.

Closer Relation of Refining And Chemicals Featured

Numerous papers dealing with the increasingly close relation between petroleum refining and the chemical industry will feature the meeting at Buffalo, N. Y., September 10 of the Petroleum Division, American Chemical Society.

Several papers will describe work in classical petroleum refining and testing methods, which, it was explained, are under attack by newer techniques. A group of Socony-Vacuum chemists will point out the shortcomings of the present empirical method of measuring color and demonstrate the ease with which the photoelectric colorimeter isolates the confusing factors of brilliance, hue and purity.

A. C. Byrns and T. F. Doumani, of Union Oil Co. of California, Wilmington, Calif., will report an investigation into the field of chemicals from petroleum through the pilot-plant stage of the reaction of gas polymers with acetic anhydride. The products, it was said, may be of interest as high-boiling solvents or industrial perfumes. Papers on lubricating oils will be read by R. G. Larsen, S. K. Talley, and F. A. Armfield of Shell Development Co., Emeryville, Calif.

Other speakers include: E. E. Nelson, W. S. Bonnell, J. H. Ottenweller, Clark Holloway, Jr., and Whitney Weinrich, of Gulf Research & De-

Sketches of Plant Operators . . .

S. A. MONTGOMERY, formerly of Wood River, Ill., this week became general manager of the Standard Oil Co. (Indiana), Whiting, Ind., refinery, the largest single petroleum manufacturing plant in the Middle West. In accepting the promotion to Whiting, Mr. Montgomery vacated the managership at Wood River which he had held since 1934.

E. J. Shaeffer, succeeded by Mr. Montgomery in the Whiting manager's office, retired September 1 because of ill health. Dr. Shaeffer joined Standard of Indiana in 1915 as a chemist at Whiting after winning a Ph.B. at Brown University and a Ph.D. at Johns Hopkins and serving as Carnegie research fellow at Hopkins. He had been manager at Whiting since 1934.

Mr. Montgomery joined the company in 1919 as a chemist at the Wood River, Ill., refinery after his discharge from the chemical warfare service at the end of the first World War. Before enlisting in the service he had gained a B.S. degree in chemistry at Mississippi State College.

At Wood River he had been successively assistant superintendent of the paraffin department, superintendent of the lubricating and paraffin department and assistant general superintendent and general superintendent of the refinery before being promoted to manager in 1934.

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Practically all the power you put into this free-running tube cleaner goes into smashing coke — none of it wasted in overcoming thrust friction. Of course it does a faster job, stands up longer, saves hours of still down time. Check on this with our nearest field office, or write us.
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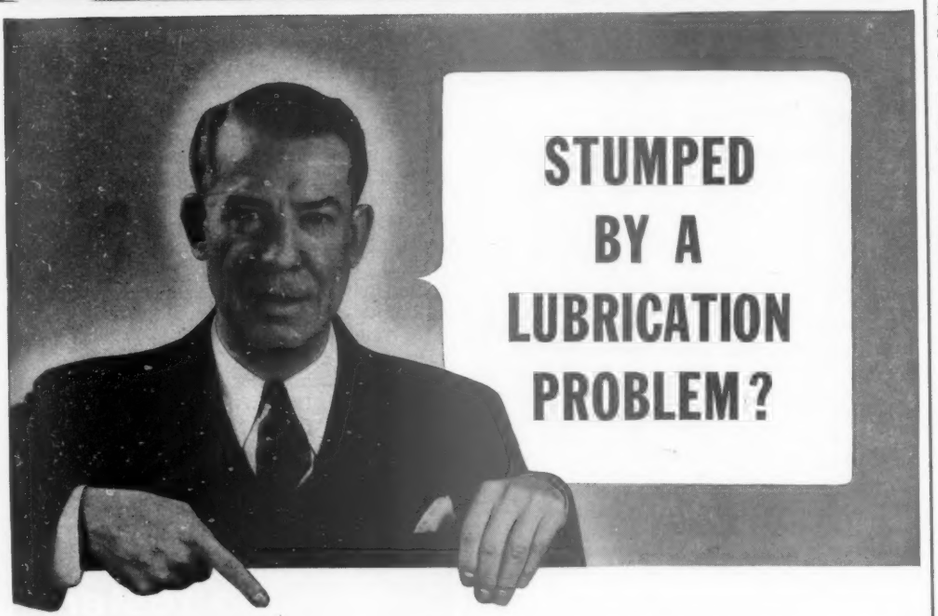

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velopment Co., Pittsburgh, Pa.; M. R. Lipkin and C. C. Martin, of Sun Oil Co., Marcus Hook, Pa.; A. J. Good, W. C. Rousseau and M. H. Hutchinson, of E. B. Badger & Sons Co., Boston; Robert R. White, George G. Brown, Charles F. Weinaug and D. L. Katz, of University of Michigan; Emma P. Carr and Lucy M. Pickett of Mount Holyoke College; W. F. Seyer, R. F. Patterson, L. J. Keays of the University of British Columbia.

Ohio Farm Cooperative Plans To Enter Refining Business

COLUMBUS, Ohio.—The proposal of the Ohio Farm Bureau Cooperative Association to acquire or build a refinery for the manufacture of petroleum products for distribution through "coop" outlets is receiving favorable endorsement in the local organizations, it was reported here this week.

Ohio Farm Bureau trustees, in their July meeting, approved provisional plans to expand the share capital of the wholesale cooperative to the extent of $500,000, providing the local "coops" supported the suggestion. Several county farm bureau cooperatives and individual members have subscribed to the increased share capital, a check of the central bureau here this week disclosed.

The plan is still nebulous in that the expanded share-capital goal is far beyond subscriptions to date. Furthermore, there has been no definite decision on actual operation. It was pointed out here that present shortages of steel virtually preclude the possibility of building a new plant and that those potentially available by purchase are strictly limited.

Whiting Refinery Employes Honored for Bond-Buying

WHITING, Ind.—A survivor of the aircraft carrier Lexington, Everett V. Copeland, of Howe, Okla., who is a Navy diesel-engine operator, last week saluted more than 5,000 employes of the Whiting refinery of Standard Oil Co. of Indiana who are producing diesel fuel, aviation gasoline and lubricants such as carried the queen of the flat tops and its fighting planes to victory in the Coral Sea.

While a Navy color guard stood at attention, the Lexington survivor did honor by hoisting the Minute Man flag of the United States Treasury Department which was awarded the employes of this largest complete refinery in the world for approximately 93 per cent participation in the pay-roll savings plan for buying war bonds.

Wray E. Fleming of Indianapolis, Indiana state administrator of the war savings staff, presented the flag to Chester Barter, tinner and president of the Standard Oil Employes Association, Inc.

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BOOK REVIEW

INTRODUCTION TO HEAT TRANSFER. Aubrey I. Brown and Salvatore M. Marco. McGraw Hill Book Co., New York, N. Y. 232 pages. $2.50.

The authors are professor of heating and ventilating, and assistant professor of mechanical engineering, respectively, at Ohio State University. In this volume they have presented the essential fundamentals of heat transmission in a treatment that is readily comprehensible and at the same time fairly comprehensive. Emphasis is placed on acquiring a clear conception of the manner in which heat is transmitted and upon development of the fundamental and mathematical expressions which apply to the calculations of heat transfer through clean surfaces. The wealth of detailed numerical examples is a feature of the volume.

Pipe-Line Activity

Pipe Line From Corpus Christi To Houston-Beaumont Studied

HOUSTON, Tex.—H. C. Wiess, chairman of the transportation committee of District 3, appointed by the Office of Petroleum Coordinator, has announced the appointment of a temporary subcommittee to study the need of an oil pipe line from Corpus Christi, Tex., to the Houston-Beaumont area. The members of the subcommittee are J. A. Neath, chairman, Humble Oil & Refining Co., Houston, Tex.; Harold Decker, Seaboard Oil Co., Corpus Christi; E. M. Smith, United Gas Corp., Houston; and P. E. Hurley, Shell Oil, Inc., Houston. The members of the subcommittee represent the transportation, production, natural gas-gasoline, and refining branches of the industry, respectively.

Appointment of this subcommittee was made in accordance with a resolution adopted by the transportation committee at its meeting on August 18. The resolution stated that a line from Southwest Texas to the upper Texas Gulf Coast appeared necessary because of the restriction of movement from the Southwest Texas area and the probable need to release some East Texas crude at refineries in the Houston-Beaumont area, in order to provide sufficient crude for the 24-in. pipe line from East Texas to Illinois and to permit the reversal of some pipe lines which are now moving crude from East Texas to the Gulf Coast.

The resolution instructed the subcommittee to determine whether or not the construction of an oil pipe line from Southwest Texas to the Houston-Beaumont area is necessary, and in case such line is needed, to report on the capacity required and the most economical and practical means of providing such facilities. The resolution designated Mr. Neath as chairman, and instructed the subcommittee to make its report as early as possible.

The subcommittee has already under way its preliminary studies and will hold its first meeting this week.

Right of Eminent Domain Extended to Project 5

WASHINGTON, D. C.—Authorization to exercise the right of eminent domain in the acquisition of right-of-way for the El Dorado to Helena, Ark., segment of pipe-line Project 5 has been granted in a proclamation signed here August 29 by President Roosevelt.

More than half of the right-of-way has been cleared for the 158-mile 10-in. carrier which will be linked with other facilities either in place or under construction between Benton, La., and Port Arthur, Tex.

War Emergency Line Work Is Resumed After Labor Stoppage

Work was resumed last week after a temporary cessation owing to a labor dispute on a segment of the War Emergency Pipelines 24-in. line near Cape Girardeau, Mo. C. S. Foreman & Co., contracting firm on the affected portion of the big line, withdrew 160 employes from the project August 27 rather than risk violence when about 50 union men, mostly from Illinois, appeared and ordered stoppage of the work.

B. E. Hull, vice president and general manager, asserted from Little Rock, Ark., headquarters of the War Emergency corporation that a "compromise agreement" had been reached with the dissatisfied labor leaders and work was resumed August 28.

Evan Dale, president of the Carbondale, Ill., local of the International Hod Carriers, Building and Common Laborers of America, headed the group of union men ordering a halt of work. The Illinois men, Mr. Hull said, were enlisted for the demonstration by the St. Genevieve, Mo., local which has only a small membership. Later, the St. Genevieve local demanded that the contractor institute a closed shop and "check off" $15 initiation and "transfer" fee.

Interior Department Seeks Reduction of Rates in Rockies

The Department of the Interior conducted an oral hearing on September 3, at 10 a.m., in Room 5160, Interior Building, Washington, D. C., as a step toward reduction of pipe-line rates affecting movement of certain government royalty oil in the Rocky Mountain area. Although it has been assumed that the Interstate Commerce Commission is the federal body through which pipe-line rate matters are normally handled, this is believed to be the second case of its kind in which the Department of the Interior has asked for rate revision.

The case for which the hearing has been called is known as Douglas 031469, etc. The notice of the meeting refers to an order issued April 16, 1942, to Consolidated Oil Corp., Standard Oil Co. (Indiana) and various subsidiary and affiliated companies to show cause:

1. Why the present rate of 70½ cents per barrel charged for transporting oil from the Salt Creek area (by way of Fort Laramie, Wyo.) to the vicinity of Salt Lake City, Utah, via Stanolind-Utah pipe line, as compared to the proportionately lower rates charged by Stanolind Pipe Line Co. from Welch, Wyo., to Sugar Creek, Mo., Whiting, Ind., and Wood River, Ill., as well as from and to other points, should not be considered as unreasonable and discriminatory.

2. Why the refusal of Sinclair Refining Co., a common carrier by pipe line, to accept and convey oil at a reasonable rate from the Salt Creek area, Wyoming, to Parco, Wyo., for transfer at the latter point to the pipe line of the Utah Oil Refining Co., should not be considered as discriminatory and in violation of the terms of the respective rights-of-way granting acts.

3. Why Sinclair Refining Co. and Utah Oil Refining Co. should not be required to establish and maintain appropriate facilities at Parco, Wyo., for the transfer or transportation of oil at that point between their respective pipe lines and to establish a reasonable and nondiscriminatory joint rate for the transportation of oil from the Salt Creek field, Wyoming, to the vicinity of Salt Lake City, Utah.

Nation's Pipe-Line Systems Increase Volume; Revenues Fall

An increase of nearly 17,000,000 bbl. in the volume of petroleum transported by the major pipe lines of the nation during the second quarter this year over the comparable 3 months in 1941 was reported last week by the Interstate Commerce Commission. The 45 reporting companies handled 377,031,045 bbl. of oil originating on their lines and received from connections in the April-June quarter. Pipe-line systems reporting to the ICC in the second quarter of 1941 handled 360,729,595 bbl.

Revenues of the carriers decreased in the quarter, however, as in several recent periods despite the larger amount of oil handled. The ICC said the reduction under 1941's second quarter was 8.4 per cent, or from $58,893,829 to $53,956,557.

The commission's figures showed decreased revenues for 26 of the reporting lines, ranging from 2.4 per cent by Stanolind Pipe Line Co., to a drop of 91.1 per cent suffered by Buffalo Pipe Line Corp.

Ajax Pipe Line Corp., on the other hand, registered an increase in revenue of 142.9 per cent, reflecting the diversion of normal coastwise-tanker shipments to the interior pipe-line systems for delivery to the East Coast.

CLASSIFICATION OF CRUDE OILS

THE CLASSIFICATION OF CRUDE OILS THROUGH LABORATORY ANALYSES NOW REQUIRED BY THE STATE AND FEDERAL REGULATORY BODIES IS FOR THE PURPOSE OF PRORATION AND PRIORITIES WHEN ORDERING DRILLING EQUIPMENT.

AUTHENTIC AND IMPARTIAL SAYBOLT ANALYSES OF CRUDE OILS, NATURAL GAS AND NATURAL GASOLINE ARE BEING USED AS A BASIS FOR THIS CLASSIFICATION.

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EVERY WEEK

1. Examine commutator and brushes
2. Check oil level in bearings
3. See that oil rings turn with shaft
4. See that shaft is free of oil and grease from bearings—Keep oil where it belongs
5. Examine starter, switch, fuses, and other controls
6. Start motor and see that it is brought up to speed in normal time.

EVERY SIX MONTHS

1. Clean motor thoroughly, blowing out dirt from windings and wipe commutator and brushes
2. Check brushes and renew any that are more than half worn
3. Examine brush holders and clean them if dirty. Make sure that brushes ride free in the holders
4. Check brush pressure
5. Drain, wash out, and renew oil in sleeve bearings
6. Check grease in ball or roller bearings
7. See that end play of shaft is normal
8. Inspect and tighten connections on motor and control
9. Check current input and compare with normal
10. Check motor foot bolts, end-shield bolts, pulley, coupling, gear and journal setscrews, and keys.

ONCE A YEAR

1. Clean out and renew grease in ball or roller bearing housings
2. Test insulation by megger
3. Check air gap
4. Clean out magnetic dirt that may be hanging on poles
5. Clean out undercut slots in commutator
6. Examine connections of commutator and armature coils
7. Inspect armature bands.

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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

The latest exemption from M-68 affecting a large area grants Illinois, Indiana and Kentucky the right to use materials for wells located on less than 40-acre spacing. In addition it also indicates what may be the future trend in the Government's supervision of the oil industry. This trend affects production in all the fields of the United States.

From the time OPC was created, many in the industry have felt that eventually allocation of equipment would be made on a project basis. This would mean that OPC would approve and WPB grant material for those wells which would do most toward furthering the war effort. The value of a well to be drilled would take into account the total expenditure of vital material, the amount of production to be obtained, the type of production, and the geographical location of the well.

Permitting the Illinois-Indiana-Kentucky operators to drill one well to 10 surface acres when the production is obtained from sand horizons less than 2,500 ft. and 20 surface acres when the production comes from sand horizons below 2,500 ft. is entirely due to the necessity for increasing the production from this area. No exemption was granted to lime-pay fields. Once more it appears that the central interior basin is being smiled on because of its geographical location.

Granting of the blanket exemption which would permit more drilling in one sense marks the first departure of OPC from a policy of strict conservation. Originally, the petroleum coordinator attempted to get Illinois to follow sounder production methods but since that time the picture has changed to one of necessity of getting out of Illinois, Indiana and Kentucky all of the oil possible.

This is taking nothing away from Illinois as a producing state, principally because it never had sound conservation program of development and production. There were a few fields in the state, notably Louden, Dix, and to a lesser extent the lime pools on the eastern side of the state which produced on an engineering basis.

However, this move does foreshadow the possible increase later in the production from other and restricted areas. Some of these pools may or may not suffer from a greater rate of withdrawal. It will be interesting to see if engineering will suffer due to expediency after being kicked around by economics for so long.

In contrast to the order issued early in June (see June 11 issue p. 66) the present order will cause an increase in drilling in the tristate area during the remainder of the year. The earlier exemption actually contained little of benefit in the effort to get more production from the area.

The present order will automatically lapse on January 1, 1943, but may be extended unless the Texas-Illinois war emergency pipe line is completed before that time.

EASTERN TEXAS: Testing is under way at the deep wildcat in western Cherokee County and a good flow is reported from the lower Glen Rose (p. 61).

ILLINOIS: A confusion of spacing regulations and lack of recent important discoveries has resulted in a downward trend in Illinois operations. The first dry hole has been completed in the St. Jacob pool, Madison County, and a test in St. Clair County has drilled plug to test streaked saturation in the Trenton lime (p. 67).

CALIFORNIA: Completion of a Solano County gas discovery has been delayed several weeks by gas which erupted around the well. A test in the Jacalitos field, although structurally low, has cored the largest amount of Temblor oil sand yet found in any well in the field (p. 63).

INDIANA: A wildcat 4 miles south of New Harmony, Posey County, has encountered saturation in the Palestine sand and a well north of this test is drilling below the Cypress with no shows reported (p. 62).

TEXAS GULF COAST: A wildcat northeast of the Lake Creek field, Montgomery County, showed possibilities of opening a new Wilcox sand pool and a test west of Garwood, Colorado County, has opened a new Yegua sand pool for the district. A Jefferson County wildcat which was thought to open a new field was reported dry (p. 66).

PERMIAN BASIN: A new Simpson pool is indicated in southwestern Crane County and operators in the Chancellor field, Pecos County, are considering the possibility that oil found in the Castile lime may be seepage from Delaware sand (p. 61).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended August 29, 1942)

	Oil	Gas	Dry	Total	Footage	Ttl. comp. to date 1942	Ttl. comp. to date 1941
N. Y., Pa., and W. Va.	43	12	5	60	159,984	2,366	3,905
Ohio	8	19	6	33	85,378	729	1,085
Indiana	1	0	7	8	10,417	236	342
Kentucky	0	1	1	2	6,036	199	415
Illinois	18	0	26	44	111,582	1,165	2,263
Michigan	5	3	6	14	35,789	479	565
Kansas	31	2	11	44	143,392	1,056	1,439
Nebraska	0	0	1	1	3,515	26	64
Missouri, Iowa	0	0	0	0	0	10	25
Oklahoma	5	0	4	9	37,585	817	1,237
Texas:							
North Central Texas	11	1	6	18	52,120	784	1,785
West Texas	13	0	3	16	69,687	984	1,456
Texas Panhandle	1	1	0	2	5,811	266	410
Eastern Texas	4	0	4	8	36,663	276	711
Texas Gulf Coast	7	2	3	12	72,450	522	724
Southwest Texas	5	0	6	11	57,942	777	1,193
Total Texas	41	4	22	67	294,673	3,609	6,281
North Louisiana	7	1	3	11	44,270	327	452
Louisiana Gulf Coast	6	0	4	10	84,063	363	587
Total Louisiana	13	1	7	21	128,333	690	1,039
Arkansas	2	0	4	6	24,342	114	125
Mississippi and Southeast	0	0	3	3	21,816	51	168
Montana	4	0	0	4	6,418	132	183
Wyoming	0	0	0	0	0	67	126
Colorado, Utah	0	0	0	0	0	11	25
New Mexico	2	0	0	2	6,451	183	198
California	2	1	3	6	37,810	496	754
Total United States	175	43	106	324	1,113,511	12,436	20,239
Total previous week	171	47	113	331			
Week ended Aug. 30, 1941	474	78	127	679			

MONTANA: An offset to a small well on the west side of the Kevin-Sunburst field has been completed as a large flowing well and a test in the Pilot Butte district has been plugged back to the Embar after finding the Tensleep dry (p. 65).

ARKANSAS: Two probable pool openers, in Miller and Union counties, have reported saturation in the Smackover lime. A Wilcox sand discovery in South Central Louisiana and a probable Eutaw sand discovery in Mississippi are reported (p. 68).

SOUTHWEST TEXAS: Favorable showings were logged in four wildcats in the Southwest Texas district and a southwest extension to the Midway field, San Patricio, was reported (p. 60).

MICHIGAN: Water encroachment dampened hopes for a successful completion at a wildcat in Gratiot County and the Reed City field's largest Traverse lime producer was completed, indicating increased development of this horizon (p. 60).

NORTH CENTRAL TEXAS: Two Young County wildcats have encountered saturation in the Caddo lime and one is swabbing free oil from that formation. A north extension well of the Joy pool, Clay County, has been completed as the largest flowing well in the North Texas district (p. 59).

Application of Time Logs To Porosity Studies In Central Kansas Wells

By J. P. McKEE
Consulting Geologist, Wichita, Kans.

THIS study of time-log curves was undertaken so that a better interpretation of the electric log could be made. It was noted that the sample log, time log and electric log for the same well might vary in their interpretation of the prospects for production from a porous lime. As data accumulated, the original purpose of the study was broadened to include the porous zones of the Lansing-Kansas City lime.

Many operators, contractors, drillers, and geologists have given helpful suggestions and contributed a great mass of data for this study. Without this cooperation, the work could never have been done.

Time logs are not new. They have been saved for a number of years. It has become a practice in Kansas to save a time log for all or part of each rotary well that is drilled. The log is made by the driller on the well, and becomes a part of the well record. The log will show the number of minutes required to drill a certain interval of footage and will also note all shutdown time, trips, and coring time. The footage interval usually used in Kansas is 1, 2, 2½, or 5 ft.

In order to correlate the time log with the electric log, it was necessary to develop a curve. A vertical scale of 5 in. to 100 ft. was chosen since this is the scale for the detail log of the electric surveys. By trial and error the best horizontal scale was found to be 10 minutes per inch for each 2-ft. interval. The zero minute starts on the left-hand side of the cross-section paper, so that the soft zones bulge out to the left in a manner similar to bulges on the potential curve of the electric log.

Fig. 1 shows the time log and electric log curves for 1 Veverka estate, 28-8s-19w, Webster pool, Rooks County, Kansas. A striking similarity between the time-log curve and the potential curve will be noted. The top of the Lansing-Kansas City limestone was found at 3,193 ft. in this well.

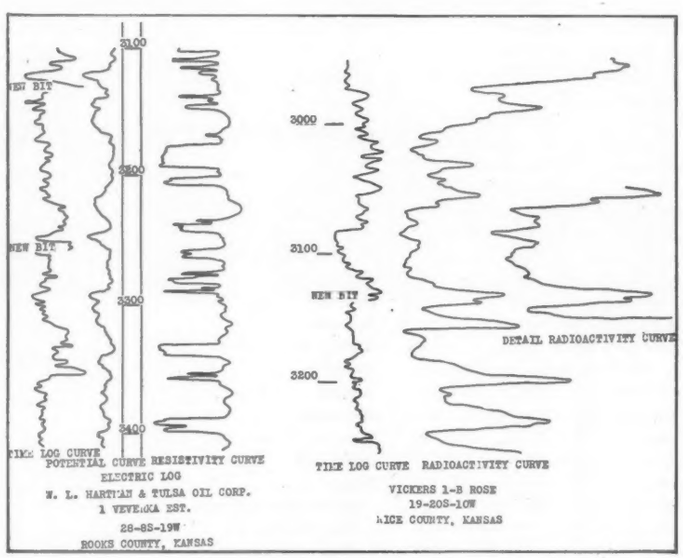
Fig. 1 also shows a time-log curve and a radio-activity-log curve for 1-B Rose, 19-20s-10w, Raymond pool, Rice County, Kansas. The similarity between the two curves is not so pronounced. However, the soft zones bulge on the left on the radio-activity log curve. The top of the Lansing-Kansas City limestone was logged at 2,972 ft. in this well.

Fig. 2 shows the intercorrelation of time logs and electric logs in the Rick pool, Sections 1 and 2, 19s-11w, Barton County, Kansas. In this area the electric-log curves are inverted due to the high salt content of the drilling mud. A time log and electric log was available on the 1-B Rick, 1-19s-11w. By using the combined data on this well it was possible to correlate the remaining electric logs and time logs available. Thus a common datum was established for working out the structure of the pool. It was also possible to arrive at some conclusions concerning the extent and development of the porous zones in the Lansing-Kansas City limestone. On wells having no time or electric logs available, sample data was used. However, due to the variations in lag this data is not as reliable. The top of the Lansing-Kansas City limestone in this pool is slightly below 3,000 ft. The big Lansing-Kansas City pay is from the soft zone just below 3,100 ft.

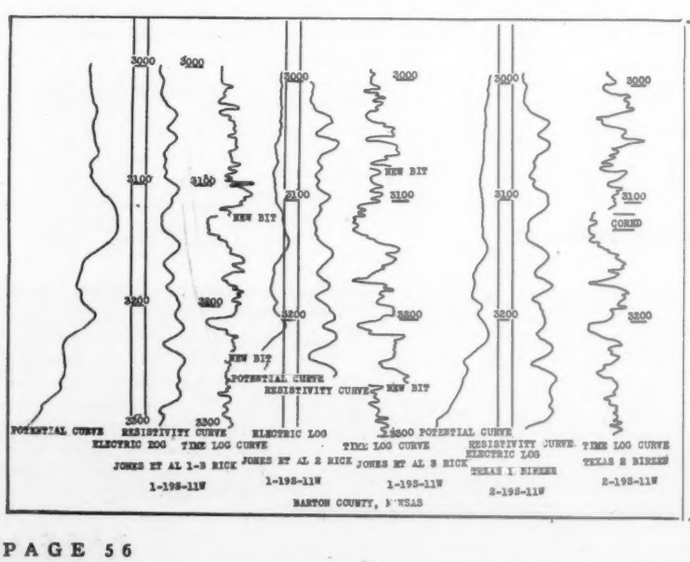
In general the Lansing-Kansas City lime has one thick porous zone and a number of smaller porous zones. The thickness and development of the porous zone will vary locally and regionally. The radio-activity log curve (Fig. 1) shows a zoning of the Lansing-Kansas City lime which can be used. The section from 3,056-3,130 ft. contains some of the prolific Lansing-Kansas City limestone pays in Rice and Barton counties, Kansas. Fig. 3 shows a cross-section of time logs which traces the above zone from the Rick pool, 2-19s-11w, in a southeasterly direction through the Eberhart pool, 23-19s-11w, Silica pool, 7-20s-10w, and Raymond pool, 19-20s-10w, to 33-20s-10w. The length of the cross-section is approximately 15 miles.

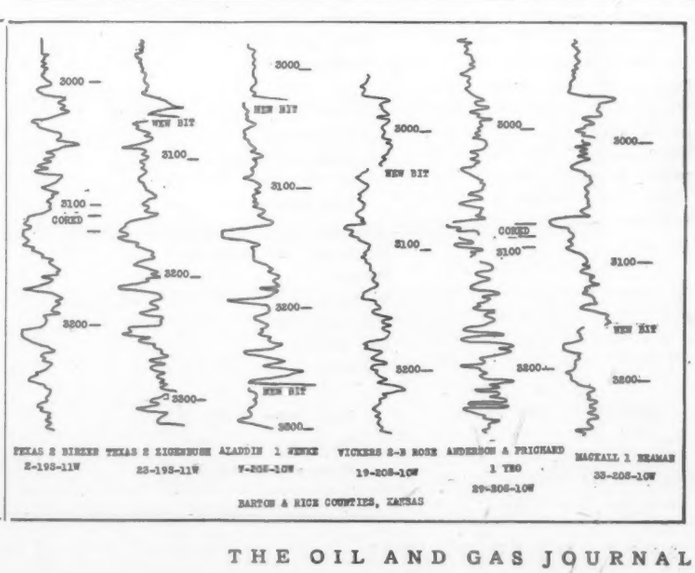
The oil and gas produced from the Lansing-Kansas City lime is associated with the porous zones. The location and development of the porous zone is important. The production may be on structure or on the flank of a structure. If the porosity is developed over the entire structure, the highest wells are the best wells. If the porosity is developed on the flank of the structure and wedges out updip, a structurally low well may produce considerable oil.

(Continued on Page 66)



Right: Fig. 1 shows the similarity between the time log and the potential curve of an electric log in a well in Rooks County, Kansas. The radio-activity log for a well in the Raymond pool shows some similarity with the drilling time log for the same well. Lower left: Fig. 2.— Intercorrelation of the drilling-time logs and the electric logs from three wells in the Rick pool of Barton County. Lower right: Fig. 3.— Correlation through time logs of the porous zones in the Kansas City-Lansing lime in the Raymond, Silica, and Eberhart pools in Rice and Barton counties, Kansas





Three Starr County Discoveries Highlight Laredo District

By F. L. SINGLETON

ALTHOUGH field development in the Laredo district during the first 7 months of the year has shown a large decrease from the preceding year, wildcatting activity has been maintained at the approximate level of last year and the results have been much more encouraging as eight new fields were opened compared to only two during the same period a year ago.

The decline in field development has been due to general conditions, plus pipe-line proration and the M-68 order restricting the drilling of one well to 40 acres. Field development at the present time is at its lowest ebb and there is little possibility that it will be increased or decreased to any extent during the remainder of the year.

As of July 31, 296 wells had been drilled in the 10 counties comprising this district. This is a decrease of 188 wells from last year when a total of 484 wells had been drilled. Of this number 99 were wildcats which is only two short of the total drilled in 1941.

A table describing the producing fields in South Texas was published in The Oil and Gas Journal, June 25, 1942, Pages 102-4.

The most interesting phase of operations has been the widespread exploration program in Starr County where three new Frio-Vicksburg sand fields were opened and drilling in the proven fields along this trend continued to enlarge their potentiality.

The three fields opened were found by the Sun Oil Co., which has carried on extensive operations since the first of the year, and is credited with having drilled approximately 12 wildcats. Of these 10 were located in Starr County. This company was one of the first to become interested in the area and acquired extensive holdings throughout most of the county on the strength of core drilling and geophysical work before any important production was developed along the trend. While the three discoveries are in the early stages of development, all are generally considered as important additions to the growing list of pools which have been added to the trend during the past few years.

Development in the North Sun field is limited to three wells, all of which are producing from different sands in the Frio-Vicksburg. The discovery well, completed through casing perforation at 5,386-89 ft., was followed with the completion of 2-C Montalvo, 1,400 ft. due west, which was completed in a new sand at 4,907-14 ft. Prior to the discovery of this field, the company drilled three dry holes, located northwest of the discovery, and it is this area that is now being watched. This is due to the recent completion of the company's 7 De Garza, 6,200 ft. northeast of the discovery, which is flowing from a third sand at 4,530-33 ft., with the top of the sand section logged at 4,514 ft. This is typical of some of the fields producing along the trend, and while there are dry holes between the two areas they are considered as part of the same structure. Development of the structure is expected to be slow inasmuch as the wells are located on a large block, controlled by a single company.

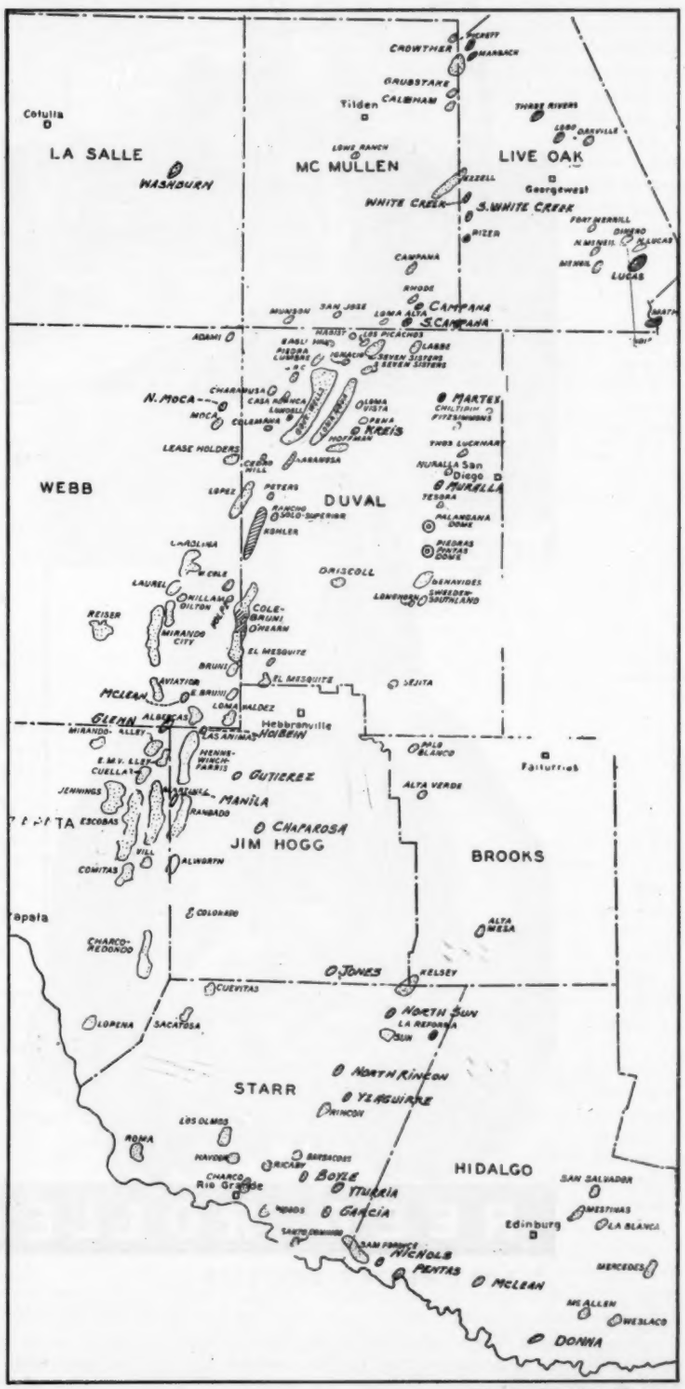
Production in the Frost field is limited to the discovery well, a small pumping well, completed in sand at 4,184-87 ft. It is situated 3,500 ft. northeast of 1-A Frost National Bank, a 5,500-ft. dry hole, and about 12,000 ft. northeast of Continental-C Davenport, another 5,300-ft. dry hole. Due to the multiplicity of sands that have been found in these structures it is probable that future development will add to the importance of this field.

In the extreme southern portion of the county, and 5 miles northwest of the Sam Fordyce field, is the Garcia pool in which only two producing wells have been completed, with production limited to the west by a 3,800-ft. dry hole, 1,320 ft. from the discovery well. The second producer, 2-A Garcia Land & Livestock Co., was completed in sand at 3,766-68 ft. which is slightly lower than the discovery pay.

Including the Kelsey field, there are approximately 10 producing fields located along this trend, and most of these have been opened during the past few years. Development at Rincon, Sun and Kelsey, the largest fields to be developed, continues on a milder scale although considerable productive acreage has been added during the year. Drilling in the Sun field has been confined largely to the west side where about 17 wells have been completed. This field is now practically defined. The west side was defined this year by Sun 2 Osborn, while other dry holes are located on the north, northeast, south and southeast sides with some drilling remaining to be done on the southwest side. At a recent date there were 82 wells producing having a daily initial production of 1,700 bbl.

The Rincon field, recognized as the largest oil reserve in the district, now extends about 5 miles in a northeast and southwest direction and around 7,000 ft. east and west. During the past few months, development has been confined to the north and northwest sides although much drilling remains to be done on the west and southwest sides.

Two important gas-distillate reserves were



Zingery Map Co., Houston

Map of the Laredo district showing location of producing fields

Regardless of depth or formation

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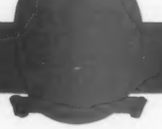

REED ROLLER BIT CO

POST OFFICE BOX 2119 HOUSTON, TEXAS

DISCOVERIES, LAREDO DISTRICT, JANUARY-AUGUST 1942

Field—	County	Discovery well	Survey	Date of discovery	Formation	Depth (ft.)	Thickness of sand (ft.)	Init. prod.	No. of wells
Alamo	Hidalgo	McCollum Expl. et al 1 Sweeney	El. A. D. Gato grant	4-15-42	Frio-Vicksburg	5,505-10	10	200 bbl., ⅞-in. ch.	1
				6-22-42		5,933-58	25		
Frost	Starr	Sun Oil Co. 2-A Frost Natl. Bank			Frio-Vicksburg	4,185-91	8	32 bbl., pumping	1
Garcia	Starr	Sun Oil Co. 1 Garcia Ld. & Cattle Co.	Y. Trevino 97	3-15-42	Frio-Vicksburg	3,748-53	8	196 bbl., 5/32-in. ch.	2
McLean	Webb	O. W. Killam 1 Marrs McLean	No. 610	1-12-42	Jackson	1,243-49	10	288 bbl., ¼-in. ch.	5
North Sun	Starr	Sun Oil Co. 1-C Montalvo	Los Tetaches	1- 9-42	Frio-Vicksburg	4,386-89	10	121 bbl., 7/64-in. ch.	2
Pentas	Hidalgo	Arkansas Fuel 1 J. W. Heard	Los Ejidos grant	2-15-42	Frio-Vicksburg	6,020-26	10	22 bbl., 5/32-in. ch.	1
Green Branch	McMullen	Quintana Pet. 1-C South Tex. Dev. Co.	E. M. Beall 26	7-10-42	Wilcox	5,720-26	10	Gas well	1
North Moca	Duval	Magnolia 1 Duval County Ranch Co.	Zapata C.S.L. Sur.	6-2-42	Mirando (upper Jackson)	1,971	8	15 bbl., pumping.	1

added to the list of such fields in Hidalgo County. These were the Pentas and Donna fields, located near the Rio Grande River. Thus far development has been confined to the discovery wells and the extent of these structures cannot be determined at this time, although the multiplicity of sands logged in the discovery wells, plus the possibility of finding production in downdip sands which have been found in other similar structures, mark them as future potential oil fields.

The opening of the McLean field, Webb County, southwest of the old Bruni field, added a new and deeper sand for the Jackson shoreline trend, believed to be in the upper Yegua. However, production from this sand has been limited to a small area with only five producing wells completed. Production extends north and south for a distance of approximately 4,000 ft. with dry holes located on both sides of the field, approximately 1,000 ft. from production. While production may be extended east and west, dry holes have been drilled on the edges of the structure by O. W. Killam and Magnolia Petroleum Co. This discovery led to the drilling of a number of wildcats but all were failures.

With Wilcox sand production in this district still confined to the Washburn field, La Salle County, the development trend of the field has been followed with much interest. There are now six producing wells on the structure which have extended the limits of the field approximately 10,000 ft. northeast-southwest. Production is limited on the southwest and west sides by dry holes that have been drilled during the year. There is still much development to be done before the extent of the structure can be determined, but this is expected to be slow due to the lack of pipe-line outlets.

There have been numerous Wilcox tests drilled and while the results have been disappointing, the possibility of developing additional producing fields still exists and exploration for this type of production is expected to be extended in the future. Thus far this type of development has centered on undrilled prospects, but many of the shallow fields located on the old Jackson shoreline trend are in line for deeper exploration in view of the success that has been obtained in other fields located farther updip. In the limelight at this time is the Green Branch area, McMullen County, where Quintana Petroleum Co. is attempting to find oil production after completing 1-C South Texas Development Co. as a gas well in the Wilcox at 5,720-26 ft., and in the Piedra de Lumbre field, where Magnolia Petroleum Co. is now engaged in drilling a deep Wilcox test.

As of August 1, there were 97 producing fields in the district, with 6,086 producing wells having a daily average production of approximately 49,000 bbl. At a recent date, there were 25 active operations with the majority of the activity centered in Duval, Webb and Starr counties.

NORTH CENTRAL TEXAS

Two Young County Tests Report Oil Showings in Caddo Lime

By ROBERT INGRAM

WICHITA FALLS, Tex.—Standard Oil Co. of Texas, with headquarters at Houston, appears to have made three successive wildcat strikes since it entered the North Texas district recently through purchase of half interest in part of Hanlon-Buchanan's properties. The first discovery was the 1 Pattie Griffin, already completed, in Jack County.

Second and third are in Young County where Standard Oil Co. of Texas 1 Daws swabbed free oil from Caddo lime at 3,847-60 ft., stood overnight and had some fill-up, and although no details are being released, the well definitely looks like a discovery. The same company's 1 Holbert, wildcat 2 miles northeast of the 1 Daws, is reported to have passed up a good Strawn sand oil show and to be now in Caddo lime with a better show than found in the 1 Daws. Information is "tight" on both tests.

Eleven miles southeast of Graham, Hanlon-Buchanan 2 Street, Conner Survey, drilled and cored conglomerate with oil show from 4,070-80 ft., total depth, and set casing on top to test. The Marble Falls was topped at 3,780 ft.

Montague County

A new shallow Canyon sand pool for northeastern Montague County has been opened by Seitz, Comegys & Seits 1 King, E. B. Wooten Survey, north of the Benton & Holmes pool. The discovery was completed to pump 40 bbl. of oil plus 5 bbl. of water in 48 hours through 21 holes in casing opposite the Canyon sand from 1,630 to 1,637 ft.

Big Well at Joy Pool

Indicating the largest producer ever completed in North Texas, the Shell Oil Co., Inc. 1 Brock, Block 30, H. Williams Survey, extending Mississippi lime production ¼ mile north in the Wynn (Joy) Caddo-Mississippi lime pool of southern Clay County, flowed 345 bbl. of oil in 45 minutes, or at the rate of 476 bbl. of oil an hour. Flow was through open tubing and 4-in. flow line on casing.

The Mississippian had been acidized with 2,000 gal. Top of the Mississippian is 5,937 ft., with saturation from 6,021 ft., total depth. Location has been made for 2 Brock, north offset to 1 Brock.

Clay County Extension

In the Watson pool, Bend lime discovery in Clay County north of the Antelope field, Roy Lee, trustee, 1-A (or No. 2) Watson, east offset to the discovery well, plugged back from 6,053 ft. to 5,700 ft. to make the second well for the pool. Casing was perforated at 5,464-74 ft. with 40 holes and the formation treated with 3,000 gal. of acid. The well cleaned itself and is flowing 20 bbl of oil per hour on ⅞-in. choke. A test of the Ellenburger, in which the hole was originally bottomed, failed.

Lee, trustee, 1 Conrady, also in the Watson pool, is drilling at 3,070 ft. It is one of three wells scheduled for the pool.

Wise County

Stanolind Oil & Gas Co. 1 Menasco, Block 9, Falls County School Lands, 7,000-ft. rotary wildcat 1½ miles northwest of Park Springs in northwest Wise County, cored from 5,692-5,808 ft. and recovered 4 ft. of coarse conglomerate showing oil, 1½ ft. of hard sandy shale with slight show and 4½ ft. of shale. A 30-minute drill-stem test at 5,709-5,808 ft. showed air in 2 minutes and recovered 60 ft. of oil-and-gas-cut mud. It is drilling ahead.

NORTH TEXAS COMPLETIONS

Wildcats

Young County: B. C. Gilmore 1 Delia Holly, L. W. Ross Sur. A-1352, 3 mi. SW of Farmer, dry, T.D. 711 ft.

Fields

Ferguson, Archer County: Fain-McGaha Oil Corp. 33 W. P. Ferguson, 1,310 ft. from N line and 1,750 ft. from W line Sec. 2, S.P.R.R. Sur. A-968, sand 648-63 ft., T.D. 666 ft., input well.

Fish Creek, Young County: Mid-Union Drilling Co. 1 W. W. Griffin, 330 ft. from S and W lines of P. Tackett Sur. A-1255, gaged 7,500,000 cu. ft. gas, pay 3,320-70 ft., T.D. 3,375 ft.

Forestburg, Montague County: Sinclair Prairie 2 I. M. Jones, 1,130 ft. from NW line and 510 ft. from NE line of Singletary Sur. A-808, flowed 1,100 bbl. after acid, lime 7,072 ft., T.D. 7,212 ft.

K.M.A.-Ellenburger, Wichita County: E. C. Oil Co. 33-E Mrs. Anna Mangold, 275 ft. from E line and 467 ft. from S line of N½ Lot 33, Mangold subd., P. Castleman Sur. A-35, flowed 402 bbl., pay 4,348 ft., T.D. 4,380 ft.

Lewis Production Co. 10-E Wichita National Bank, 526 ft. E and 954 ft. S of NE cor. Blk. 3, K.W.V.-F.L. Sur., but in W. H. Spillers Sur. A-258, flowed 542 bbl. after acid, pay 4,282 ft., T.D. 4,288 ft.

Thornberry, Clay County: W. T. Hutcheson, Jr., 1 C. T. Taylor et al, Blk. 38, Bacon subd., potential 10 bbl., sand 1,118 ft., T.D. 1,126 ft.

Staley Oil Co. 9 E. H. Hamilton, 962 ft. from N line and 330 ft. from E line Sec. 83, Byer Brothers subd., potential 42 bbl., sand 1,135 ft., T.D. 1,140 ft.

Drilling Started in Extension Areas of Wimberly Pool

FORT WORTH, Tex.—Jones County's Wimberly pool continued the center of activity in West Central Texas as drilling was begun on extensions north and northeast of the pool, and final gage was reported for Fain-McGaha 1 L. L. Horne, northeast extension. On the gage, the 1 Horne made 726 bbl. daily natural from sand at 2,402-13 ft. Pressures were 250 lb. on casing and 105 lb. on tubing. Location is in the northeast corner of Martinez Survey 137.

Fain-McGaha has spudded a new northeast outpost, 1 Butler, 330 ft. from the south and west lines of the east 80 acres of the west 160 acres, same survey. Ungren & Frazier plan to drill 2 Moore, Martinez, Survey, northeast of the Fain-McGaha wells, and Merry Brothers & Perini 1 J. F. Winters, Block 138, Winters Survey, is making hole.

On the north side, S. C. Herring 2 Mashburn was drilling below 2,170 ft. after underreaming casing. It is in S½ Section 86, Godwin subdivision, De Witt Survey 126, and is ¼ mile west of 1 Mashburn, brought in several weeks ago. E. L. Wilson et al 1 Mashburn, north outpost in Section 86, has begun drilling, and on the west side

(Continued on Page 69)

MICHIGAN OPERATIONS

Gratiot County Wildcat May Prove Disappointing

By OTTO C. PRESSPRICH

SAGINAW, Mich.—Water encroachment dampened hopes for the Gratiot County wildcat strike last midweek which for a few days attracted oil men's interest as a possible pool opener in a county that has been the scene of scores of disappointments in recent years.

Of probably greater importance was the completion of the biggest Traverse producer to date in the Reed City field where Ohio Oil Co. reported its 1 Moore in Section 18, Lincoln Township, Osceola County, completed for initial potneial of 3,240 bbl. at a depth of 2,946 ft. Most Reed City oil comes from the Monroe, two more fair-sized producers from that strata around the 3,800-ft. level being brought in last week by Sun Oil Co.

The Gratiot County wildcat was drilled by Chartiers Oil Co. on its Church lease, NE SE SE 31, Pine River Township, 3 miles west of Alma. The well came in for an estimated 30 bbl. an hour. After the well was shut in preparatory to cementing, pressure blew tools and head. As the well is nearly ringed by dry holes, oil men questioned its worth, especially as water developed in the hole, apparently from Traverse lime strata. The oil comes from the Dundee top.

Throughout Michigan last week operations resulted in 14 completions, five of them bringing new oil wells and three good production of natural gas. Six wildcat tests were abandoned as dry holes—in Barry, Allegan, Kalamazoo, Monroe, Ottawa and Van Buren counties. One of the new oil producers is classed as a wildcat. It is Sun Oil Co. 2 Horner in Section 11 of Norwich Township, Missaukee County, completed at 4,524 ft. and producing 16 bbl. of oil a day. One of the infrequent new completions in the Redding-Clare field also was reported. That well, Pure Oil Co. 2 Van Deusen, in Section 1, produced 250 bbl. the first 18 hours after acid treatment at 3,800 ft.

The gas wells had a combined initial potential of 30,800,000 cu. ft. a day, two of them being Taggart Brothers Co. developments in Section 31 of Winterfield-Clare, one rated at 13,600,000 ft., the other at 10,100,000. The third well was developed by Arenac Oil & Gas Co. in Section 16, Deep River-Arenac, producing 7,100,000 cu. ft.

Michigan Crude Output May Be Increased by Dual Completions

With Michigan July production showing a decline, and August production appearing to be averaging about 63,000 bbl. a day, P. J. Hoffmaster, state supervisor of wells, said he doubts that the state can attain its September quota of 66,700 bbl. daily. However, Mr. Hoffmaster said, September output may be increased if plans to take oil from two formations at one time work out successfully. He declared Pure Oil Co. and Ohio Oil Co. have indicated intentions of dual-completion experiments in the Reed City field.

If such operations do not damage oil-bearing structures, Mr. Hoffmaster said, producers will be permitted to take twice the allowable for one well, and if need arises new proration schedules may be formulated. Also to help with the demand for more production the Conservation Department has announced a new rule. Where there are two wells on a 40-acre lease, each producing from a different formation, the full 40-acre allowable will be credited to each well. The ruling applies chiefly to the Reed City pool. The order enables producers to take 262½ bbl. from each well daily, instead of 150 bbl.

Drilling permits issued last week by the Conservation Department totaled 13, bringing the 1942 total to 378. Four permits are for Osceola County, Sun Oil getting three for drilling in Osceola Township, Gulf Refining Co. the other for a Richmond Township test. Two permits each were for Ottawa and Van Buren, the rest going to Allegan, Bay, Oakland, Missaukee and Newaygo.

The first gas test in months in Deerfield-Isabella got under way last week as L & S Drilling Co. spudded 1 Hein in Section 13, Broomfield Township. In Section 24, Hinton-Mecosta, Columbia Oil & Gas Co. 1 Saterlee deep test was being completed. Located in the old Six Lakes gas field, the test was down to 3,700 ft., 150 ft. into the Dundee without results, although a small show was obtained in the Monroe. Mogul Oil Co. 1 Miscisin in Section 31, Deep River-Arenac was being watched after logging oil shows in Dundee. The well is a mile south of production. A ¼-mile-north extension of the Bay County field was indicated as United Drillers & Producers 1 Pressler, Section 28, Kawkawlin Township, was being prepared for acidizing in the Dundee.

In Clare County Pure Oil Co. prepared for production tests on 1 McClain, Section 30, Winterfield, the first deep test for the field. The hole is below 4,950 ft. and into the Sylvania sand. Stimulus to other northern Michigan drilling was expected as a result of Gordon Oil Co. 1 Myers test in Section 16, Sauble Township, Lake County. A south offset to the discovery well, the new test was making a good initial showing. Swanson Oil Co. also was testing an oil pay east of the Gordon test. It was to be acidized. Both tests are in Traverse at about 2,150 ft.

MICHIGAN COMPLETIONS

Allegan County, Monterey Township: Michigan Devonian Petroleum Co. 1 Glupter, C W½ NE NE 19-3n-13w, wildcat, dry, T.D. 1,682 ft.

Arenac County, Deep River Township: Arenac Oil & Gas Co. 1 Zurvitmski, C SW 16-19n-4e, 7,100,000 cu. ft. natural gas, T.D. 1,508 ft.

Barry County, Rutland Township: Sun Oil Co. 1 Mead, C S½ SW SW 10-3n-9w, wildcat, dry, T.D. 5,121 ft.

Clare County, Redding Township: Pure Oil Co. 2 Van Deusen, NE SW NE 1-19n-6w, 250 bbl. first 18 hr., acidized, T.D. 3,800 ft.

Winterfield Township: Taggart Bros. Co. 102 Hotchkiss-McCulley et al, C NW 31-20n-6w, 13,600,000 cu. ft. gas, T.D. 1,354 ft.

Taggart Bros. Co. 104 Budd, C SW Sec. 31, 10,100,000 cu. ft. gas, T.D. 1,328 ft.

Kalamazoo County, Pavilion Township: Muskegon Development Co. 1 Boekeloo, C SW SE 8-3s-10w, wildcat, dry, T.D. 1,307 ft.

Missaukee County, Norwich Township: Sun Oil Co. 2 Horner, trustee, C S½ SW SW 11-24n-5w, 16 bbl., acidized, wildcat, T.D. 4,524 ft.

Monroe County, Dundee Township: Joe Duffy 1 Putnam-Russell estate, SW SW SW 5-6s-7e, wildcat, dry, T.D. 2,285½ ft.

Osceola County, Lincoln Township: Ohio Oil Co. 1 Moore, C S½ SW SE 18-18n-10w, 3,240 bbl. in Traverse, T.D. 2,946 ft.

Sun Oil Co. A-2 Wirth, C N½ SW SE Sec. 22, 265 bbl. first 16 hr., T.D. 3,830 ft.

Sun Oil Co. 1 Cook, C N½ NE NE Sec. 27, 287 bbl., pinched, acidized, T.D. 3,761 ft.

Ottawa County, Wright Township: George C. Gerrard 2 Luther & Beckwith, SE SE SW 32-8n-13w, wildcat, dry, T.D. 1,173 ft.

Van Buren County, Arlington Township: Muter Oil Co. 1 Stromayer, SW NW NW 15-2s-15w, wildcat, dry, T.D. 1,169 ft.

SOUTHWEST TEXAS

Saturation Reported in Four Southwest Texas Wildcats

By F. L. SINGLETON

CORPUS CHRISTI, Tex.—Favorable showings were reported logged in several wildcats in the Southwest Texas district the past week. Most of this activity was concentrated along the Jackson trend in Bee and Goliad counties, while a semiwildcat in the North Luby area, Nueces County, encouraged further drilling in that area.

Stanolind 1 M. S. Gould, a projected Wilcox test 7 miles northwest of the town of Burnell, Bee County, cored sand with showings of oil and gas at 5,753-57 ft. and at 5,991-97 ft., but drill-stem testing showed meager results and the well is drilling ahead in shale below 6,000 ft. The showings are believed to have been logged in the Cockfield or Yegua formations. The well is located in the W. C. Gill Survey on a block of several thousand acres which has been worked extensively with geophysical instruments.

In the same county, and located in the Berclair area, Magnolia Petroleum Co. was setting a cement retained in 1 Buckner and a test is expected to be made early in the week. Total depth is 10,561 ft., where drilling was halted due to heavy gas pressures. The well encountered heavy pressures just below 10,100 ft., which has prevented much coring.

Gas-Distillate Pool Indicated in Goliad County

Nine miles southeast of the town of Goliad, Goliad County, a new gas-distillate pool was indicated with the showing of Ginther, Warren & Ginther 1 C. G. Wood, D. Morris Survey. Sand showing gas was cored at 4,051-58 ft. On a drill-stem test at 4,051-63 ft. working pressure built up to 500 lb. and 1 quart of distillate was recovered. The well is drilling ahead in shale below 4,168 ft. and will be drilled to the Vicksburg formation.

Operators interested in the North Luby area, Nueces County, were watching the results of a scheduled drill-stem test in Richardson 2 Joe Chapman, 1½ miles northeast of the Luby field. A 4-minute drill-stem test at 5,972-77 ft. tested 345 lb. working pressure and recovered 10 ft. of mud and distillate, while a second test at 5,980-90 ft. tested 285 lb. working pressure and recovered 80 ft. of oil-cut mud and 10 ft. of salt water. Total depth is 6,333 ft., with additional sand showing possible production reported logged below 6,000 ft.

Along the Cockfield trend through the eastern half of Duval County, and 2 miles northeast of the Tesoro field, Taylor Refining Co. was scheduled to test 1 Codena in Survey 306. Total depth is 5,892 ft., with 7-in. casing cemented at 5,433 ft., and the well is to be tested through perforated casing at 5,269-75 ft. Several wildcats have been drilled in the area and while encouraging showings were logged all were abandoned as dry.

A 2,000-ft.-southwest extension to the 6,000-ft. sand in the Midway field, San Patricio County, was recorded with the completion of British American 1 Mullen, which is flowing pipe-line oil from casing perforations at 6,079-86 ft. In the same area, Boykin 1 Boykin-Reed is bottomed at 6,135 ft., and is being completed after cementing 5½-in. casing at 6,130 ft.

SOUTHWEST TEXAS COMPLETIONS
LOWER GULF COAST DISTRICT

Fields

Agua Dulce, Nueces County: Stanolind 7 Weinert, dry, T.D. 6,476 ft.

La Gloria, Jim Wells County: Texas 1 Moos, dry, T.D. 7,762 ft.

Odem, San Patricio County: Seaboard 3 Ellos, 140 bbl., ⅛-in. choke, perf. casing 5,435-45 ft., T.D. 5,553 ft.

Seeligson, Jim Wells County: Sun 10 Canales, 174 bbl., 7/64-in. choke, perf. casing 5,225-29 ft., T.D. 6,040 ft.

South Caesar, Bee County: Atlantic-Transwestern 1 Cotton, 146 bbl., ⅛-in. choke, perf. casing 6,616-18 ft., T.D. 6,620 ft.

LAREDO DISTRICT

Kreis, Duval County: Bridwell 6 Escapule, 60 bbl. pumping, 10 per cent oil, sand 3,226-34 ft., T.D. 3,234 ft.

La Reforma, Starr County: Baldridge & King 1 Guerra, dry, T.D. 6,501 ft.

McLean, Webb County: O. W. Killam 2 Garcia, dry, T.D. 3,241 ft.

Nichols, Hidalgo County: Royalty Oil & Gas Co. 1-B Yturria, 23 bbl., 3/32-in. choke, sand 3,636-73 ft., T.D. 3,590 ft.

Sejita, Duval County: Standard Oil Co. of Texas et al 1 Barrera, dry, T.D. 6,290 ft.

Seven Sisters, Duval County: George Lyles 2 Wright, dry, T.D. 2,275 ft.

PERMIAN BASIN, PANHANDLE

Crane County Wildcat May Open New Simpson Lime Pool

By ROBERT INGRAM

MIDLAND, Tex.—Tubing was run for testing at Magnolia Petroleum Co. 1 D. K. Glenn, Section 20, Block 1, H.&T.C. Survey, showing indications of opening a Simpson pool in southwestern Crane County. It is 2½ miles south of Continental Oil Co. 1 Jones, Simpson producer 1½ miles south of the Ellenburger production in the Sand Hills Ordovician pool, and is 2½ miles north of the Abell pool, which produces chiefly from the Simpson but has a few wells in the Ellenburger.

Plug had been drilled on the 7-in. casing cemented at 6,113 ft. before running of tubing was begun. The casing had been cemented after the prospect, on a 40-minute drill-stem test from 6,115 ft. to 6,186 ft. had recovered 800 ft. of oil, 100 ft. of mud and 30 ft. of light drilling fluid. The well is considerably lower structurally than the Simpson producers in the Abell area and also below the level where the section is encountered in the Sand Hills sector. Total depth is 6,186 ft.

The Continental 1 Jones had been drilled into the Ellenburger at 6,146 ft. where it failed to show for production and was plugged back to 6,015 ft. for completion in the Simpson, rating 83 bbl. of oil daily.

The Texas Co. 1 George C. Fraser et al (TXL), Section 19, Block 42, Township 4s, T.&P. Survey, wildcat in extreme northeastern Crane County, was preparing to drill below 5,898 ft. in sand. It had cored from 5,860 ft. to 5,898 ft., and in two cuts recovered about 30 ft. of fine-grained dry sand.

Skelly Oil Co. 1 Richardson, Section 5, Block 31, H.&T.C. Survey, scheduled Ordovician wildcat in southeastern Crane, 7 miles north of the Wentz pool in northeastern Pecos County, is drilling at 3,233 ft. in lime.

In the Sand Hills area, Gulf 7-B Tubb, ¼-mile outpost, is drilling at 3,690 ft. in lime and its 42 Waddell et al is drilling at 2,908 ft. These two rigs are the only drilling rigs Gulf has running in West Texas.

Chancellor Pool

Possibility that the oil may be seepage from the Delaware sand was taken into account when Pure Oil Co. 1 Paul LeGros in Pecos County, heretofore hailed as the first producer from the lower Castile lime and largest natural well yet drilled in the Delaware basin, was completed. The well was gaged through a 1-in. choke on 2½-in. tubing set at 5,025 ft. with a packer at 3,412 ft. Gas volume was 936,000 cu. ft. with 688 bbl. of oil. Pay was topped at 5,071 ft. and drilling stopped at 5,072 ft. in calcitic anhydrite.

No. 1 Le Gros is in SE SE Section 36, Block 50, Township 10, T.&P. Survey, a west offset to Pure 1-A Texas Pacific Land Trust, opener of the Chancellor pool. Pure 1 H. T. Odenal, C NW NW Section 42, Block 49, Township 10, T.&P. Survey, south offset to Pure 1-A TXL, was rigging up rotary with the total depth 556 ft. in lime.

M. D. Bryant 1 J. A. McDonald, Pecos County wildcat 6 miles southeast of Girvin in the Rowan-Tong area, is in detrital material at a total depth of 5,009 ft. It is waiting on orders to deepen. Original contract depth was 5,000 ft.

Magnolia 1 Alan Robertson, NW SE Section 16, Block 142, T.&St.L. Survey, 13 miles north and slightly west of Fort Stockton, is drilling at 5,460 ft. in dolomite.

SOUTHERN WEST TEXAS COMPLETIONS

Fields

Big Lake, Reagan County: Big Lake Oil Co. 20-C University (was No. 117), NW SW Sec. 24, Blk 89 University Sur., 1,692 ft. NW of 4,300-ft. pay discovery well, old well drilled deeper, old T.D. 2,975 ft., crinoidal lime 8,395 ft., no Simpson, Ellenburger 8,536 ft., dry, T.D. 9,385 ft.

Chancellor, Pecos County: Pure 1 Paul Legros, 663 ft. from S line and 667 ft. from E line Sec. 36, Blk. 50, Twp. 10, T.&P. Sur., west offset to No. 1-A TXL discovery well, flowed 688 bbl. through 1-in. tubing choke natural, Paluxy 378 ft., base Cretaceous 483 ft., Rustler anhydrite 1,100 ft., Rustler dolomite 1,180-1,420 ft., lower Castile 3,560 ft., pay 5,071 ft., T.D. 5,072 ft.

Clara Couch, Crockett County: Cities Service 1 Owens-Hoover, NE NE Sec. 14, Blk. GG, elev. 2,737 ft., temporarily abandoned, Yates 1,200 ft., top lime 1,901 ft., T.D. 2,200 ft.

Emperor, Winkler County: Skelly Oil Co. 51 S. M. Halley, 330 ft. from N line and 2,310 ft. from W line Sec. 16, Blk. B-11, P.S.L. Sur., flowed 799 bbl. through ¾-in. tubing choke after shot, pay 2,714 ft., T.D. 2,889 ft.

McElroy, Upton County: Gulf 57 Crier-McElroy, SW SE Sec. 198, C.C.S.D.&R.G.N.G. Sur., elev. 2,597 ft., flowed 4,114 bbl. through casing after shot, pay 2,673 ft., T.D. 2,872 ft.

North Cowden, Ector County: Stanolind 2-F Holt, W½ NE Sec. 18, Blk. 43, Twp. 1n, T.&P. Sur., elev. 3,081 ft., flowed 1,102 bbl. oil and 23 bbl. water in 24 hr. through casing after shot, lime 4,330 ft., pay 4,485 ft., T.D. 4,780 ft.

Pyote, Ward County: Darby Petroleum Co. 3 University, SW SW Sec. 19, Blk. 16, University Sur., 1,320 ft. west of No. 1 discovery well, dry, T.D. 2,952 ft.

Wildcat Southeast of Shafter Lake to Resume Drilling

Union Oil Co. of California has entered the wildcat play in Andrews County with the purchase of the Mascho Oil Co. 1 A. C. Means, a drilling wildcat 3 miles southeast of Shafter Lake and 2 miles south of the Mascho Oil Co. 1 Fisher, a dry hole. In the deal, Union obtained the N½ SE (well site) and N½ NE Section 23, Block A-36. P.S.L. Survey. Consideration was not announced.

The well has set 8⅝-in. surface pipe at 256 ft., total depth 270 ft., and is ready to drill ahead with rotary. It is contracted to 4,600 ft.

Atlantic Refining Co. 1-A Texu, Section 9, Block 12, University Land, scheduled Ordovician wildcat in the southwestern part of the county 12 miles south of the deep Fullerton area and 13 miles northwest of the Embar pool, is drilling at 9,532 ft. in lime.

Gaines County Wildcats

Shell Oil Co., Inc., 1 D. N. Leaverton, Section 458, Block G, C.C.S.D.&R.G.N.G. Survey, Gaines County wildcat 4 miles southwest of the Wasson pool, is drilling in shale and anhydrite at 3,590 ft. It is contracted to 7,500 ft.

Cement has been drilled out to 6,437 ft. at the Texas Co. 1 J. Bay Robertson, Section 25, Block A-21, P.S.L. Survey, wildcat in the southern part of the county, 2½ miles west of the Kirk area. It had been cemented back to 6,429 ft. after developing water at plugged-back depth of 6,505 ft. Originally it had been carried to 7,686 ft. toward Ordovician contract.

Wildcat Progress

Having topped the Clearfork at 5,260 ft., J. R.

(Continued on Page 65)

EASTERN TEXAS

Cherokee County Deep Test Has Good Flow From Glen Rose

By ROBERT INGRAM

DALLAS, Tex.—Humble Oil & Refining Co. 1 Curtiss, deep discovery at Larissa in northwestern Cherokee County, Vaughn Survey, tested the lower Glen Rose through casing perforations at 10,160-10,200 ft. with 80 shots and flowed 88 bbl. of 48.3-gravity oil in 24 hours through ¾-in. choke. Tubing pressure was 150 lb., with gas-oil ratio of 2,500 to 1. It had set 2-in. tubing with packer at 10,122 ft.

This is apparently the Pettit zone. Another zone in the Rodessa section, at 9,877-87 ft., which showed 45-gravity oil and gas on a drill-stem test, has not been tested since casing was run.

Little change was noted in the flow a day after the first test as the well continued to flow, making 76 bbl. of oil in the last 24 hours through ¾-in. choke. Tubing pressure stood at 75 lb. and the output was cut 1.6 per cent.

Eastward at Mixon, Magnolia Petroleum Co. 1 Braly, Thomas Survey, east of St. Selman and also in northern Cherokee County, showed nothing in the Woodbine topped at 4,260 ft. (elevation 403 ft.) and is drilling at 4,400 ft. It had topped Pecan Gap at 3,180 ft., based Austin chalk at 4,235 ft. Electric log was run to 4,292 ft.

Nacogdoches County

The Texas Co.'s proposed Travis Peak test in eastern Nacogdoches County is reported moving in materials, with drilling contract let to Crowe Drilling Co. of Shreveport. Objective should be reached between 8,500 ft. and 9,000 ft. The well is 1 G. W. Strahan, in the M. J. Ariola Survey, 5 miles southeast of Appleby, 1,578 ft. south and 447 ft. west of the southwest corner of the James Warren Survey A-50, and in the M. J. Ariola Survey A-4.

Talco Deep Test

On the north side of the Talco field in Franklin County, Vaugh & White 1 Jackson, Hopkins Survey, is drilling below 6,508 ft. in anhydrite and shale. It topped the Glen Rose at 5,518 ft. R. T. Myers 1 Cox, J. M. Gill Survey, is fishing at total depth of 5,275 ft.

A Smackover lime wildcat in Bowie County, P. D. Bowlen 1 A. L. Simms, Williams Survey, just east of the Simms townsite, is drilling at 1,560 ft. with 13-in. pipe set at 200 ft.

Chapel Hill Field

A new completion for the Chapel Hill field in Smith County is Shell 2 Campbell, Parchman Survey, good for 439 bbl. of 42.2-gravity oil daily through ¼-in. choke. Ratio was 717 to 1, and pressures were 650 lb. on tubing and 1,275 lb. on casing. Pay is from the Pettit between 8,084-8,252 ft. On the east side of the field, C. R. Starnes 1 Spencer, Dillard Survey, is swabbing again after going dead after a 7-hour flow. Amount of recovery was not given. It is testing through perforations between 8,262-8,344 ft. in the Pettit.

Coke Field

Amerada Petroleum Corp. 1-B Darby, Manuel Y'Barbo Survey, south offset to the 1 Darby, set 5½-in. casing at 6,339 ft., total depth 6,342 ft., in sand. The company's 1 Robertson is coring at 6,332 ft.; their 5 Kennemer is still fishing drill pipe at 6,357 ft.; 3 Kennemer is rigging up rotary.

EAST TEXAS COMPLETIONS

Wildcats

Henderson County: Bobby Manziel 2 T. Levine estate, M. M. Sanches Sur., dry, T. D. 4,848 ft.

Hunt County: Stanley A. Thompson 1 J. M. Spuriock, J. McDonald Sur., dry, Pecan Gap 1,163-1,440 ft., base Austin chalk 2,690 ft., Woodbine 3,280 ft., water sand 3,280-88 ft., T.D. 4,079 ft.

Fields

Club Lake, Hunt County: Humble 1 W. A. Morrison, W. T. Harris Sur., dry, T.D. 2,895 ft.

Coke, Wood County: Magnolia 1 H. G. White, D. Townsend Sur., dry, Pecan Gap 2,578 ft., Austin chalk 4,007 ft., base Austin chalk 4,130 ft., Woodbine 4,570 ft., Georgetown lime 5,187 ft., T.D. 6,407 ft.

Hawkins, Wood County: Humble 4 E. Dagnell, W. Parker Sur., flowed 105 bbl. in 6 hr. through ¼-in. choke, perf. casing at 4,569-76 ft. and 4,605-73 ft., T.D. 4,700 ft.

Humble 1 Jackson-Chism, E. Wideman Sur., flowed 104.79 bbl. in 23 hr. through ¼-in. choke, T.D. 4,898 ft.

Humble 1-B Artie Robinson, M. A. Esparcia Sur., flowed 104.09 bbl. in 6 hr. through ¼-in. choke, T.D. 4,778 ft.

Pleasant Grove, Rusk County: Ross Sears 2 J. F. Pool et al, George May Sur., pumped 130 bbl., 41 gravity, T.D. 4,058 ft.

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INDIANA, OHIO, KENTUCKY

Posey County Test Encounters Saturation in Palestine Sand

EVANSVILLE, Ind.—Walter A. Martin 1 Elva Stallings, NW NW SE 25-5s-14w, about 4 miles south of New Harmony, is drilling ahead below 2,161 ft. A show of oil was found in the Palestine sand at 2,027-31 ft. and the well is reported to be running structurally higher than others drilled in the area.

The Calstar Petroleum Co. is drilling at 2,760 ft. on the 1 Perry Schoultz, NE NE SW 12-5s-14w, about 2 miles north of 1 Stallings and 1½ miles south of New Harmony. The Cypress sand at 2,679-2,716 ft. did not show any oil saturation. The 1 Schoultz topped the Glen Dean at 2,407 ft. from an elevation of 457 ft.

INDIANA COMPLETIONS

Daviess County: J. W. Cannon 1 J. Hart, NW NW SW 4-2n-5w, dry at 825 ft., Paoli 584 ft., McClosky 730 ft.

Gibson County: R. D. Brown, Inc. 1 Clem Lehman, SW NE NW 36-1s-10w, pumped 90 bbl., natural, Hardinsburg sand 1,327-40 ft., T.D. 1,370 ft.

K. W. Holland 1 Harroll-Collins, S½ S½ N½ SE Don. 97-1n-10w, location abandoned.

Posey County: J. W. Carter 1 Aldridge, SE NW 22-6s-14w, dry at 3,015 ft., base Pennsylvanian 1,721 ft., Kincaid 1,848 ft., Menard 2,066 ft., Vienna 2,210 ft., Tar Springs sand 2,216 ft., slight show oil, Glen Dean 2,292 ft., Hardinsburg 2,338 ft., Golconda 2,420 ft., Barlow 2,545 ft., Cypress sand 2,582 Renault 2,790 ft., Aux Vases 2,845 ft., Ste. Genevieve 2,885 ft.

Spencer County: Earl Paulsom 9 R. J. Stewart, SE SE SE 28-6s-5w, dry at 1,004 ft., Glen Dean 685 ft., Golconda 775 ft., Barlow 853 ft., Benoist 930 ft., Benoist sand 961 ft., Renault 973 ft., Ste. Genevieve 1,002 ft.

F. Forrest et al 1 A. Eberhardt, SW NE NW 2-5s-6w, dry at 1,200 ft., Ste. Genevieve 1,102 ft.

W. E. Geary, Jr., 1 R. Locken, SE NW 34-7s-7w, location abandoned.

W. E. Geary, Jr. 3 L. and O. Howard, E½ SE SE 35-7s-7w, dry at 932 ft., Palestine 930 ft.

Starke County: John E. Short 1 Uncapher & Peterson, NE NE NE 1-34n-1w, dry at 300 ft., New Albany 200 ft., Devonian 259 ft.

Vanderburg County: S. C. Yingling 1 C. Gerlach, NE SE SW 17-7s-11w, dry at 1,771 ft., Menard 1,600 ft., Waltersburg sand 1,709 ft., elev. 370 ft.

OHIO

ZANESVILLE, Ohio.—Scattered gas wells made up the majority of Ohio completions last week. Deep tests in Muskingum and Stark counties were completed as small gassers.

A Trenton test is being drilled in southwestern Ohio in Highland County. It is located 5 miles southwest of Greenfield on Rattlesnake Creek on the Charles I. Cope tract.

OHIO COMPLETIONS

Ashland County, Lake Township: Lyons Co. 2 Howard Young, Sec. 15, 1,300,000 cu. ft. gas, shot, Clinton, T.D. 2,804 ft.

Cramer & Hogue 1 C. E. Aker, Sec. 15, 90,000 cu. ft. gas, shot, Clinton, T.D. 2,853 ft.

Athens County, Rome Township: Ohio Fuel 4 W. A. Richardson, Sec. 1, dry, Squaw, T.D. 1,451 ft.

York Township: Kachelmacher Est. 1 L. B. Head, NW Sec. 5, 500,000 cu. ft. gas and 5 bbl. after shot, Clinton sand, T.D. 3,455 ft.

Coshocton County, Bedford Township: Blackburn et al 1 S. B. Miller, Sec. 25, dry, Clinton, T.D. 3,506 ft.

Holmes County, Monroe Township: Ohio Fuel 1 S. C. Leckrone, Lot 21, 220,000 cu. ft. gas, shot, Clinton, T.D. 3,309 ft.

Knox County, Howard Township: H. E. Perkins 1 Harley Gaines, Sec. 21, 440,000 cu. ft. gas, Clinton, T.D. 2,704 ft.

Union Township: Ohio Fuel 2 H. A. Lower, Sec. 23, dry, Clinton, T.D. 2,889 ft.

Licking County, Fallsbury Township: S. I. Miller et al 2 L. McDonald, Sec. 19, 170,000 cu. ft. gas, Berea, T.D. 774 ft.

Mary Ann Township: Penick et al 1 J. R. Banks, Sec. 13, 95,000 cu. ft. gas, Clinton, T.D. 2,772 ft.

Ray Penick 2 J. R. Banks, Sec. 13, 100,000 cu. ft. gas, Clinton sand, T.D. 2,740 ft.

Mary Ann Oil & Gas Co. 8 P. F. Shannon, Sec. 15, 1-bbl. pumper, Berea, T.D. 693 ft.

Salem Township: Ohio Fuel 3 J. T. Ledlie, Sec. 1, show gas, plugged, Maxon (water), T.D. 886 ft.

Meigs County, Rutland Township: Bengel & Downie 1 Bid Bobo, Sec 27, 300,000 cu. ft. gas, Salt sand, T.D. 629 ft.

Monroe County, Franklin Township: A. E. Robinson et al 1 W. E. Hawkins, SE Sec. 7, 25 bbl., Squaw sand, T.D. 1,560 ft.

Morgan County, Marion Township: C. P. Bowman et al 1 R. M. and May Creighton, Sec. 13, 10 bbl. after

(Continued on Page 67)

CALIFORNIA FIELD REPORT

Gas Eruption Delays Completion Of Solano County Discovery

By L. P. STOCKMAN

LOS ANGELES, Calif.—Standard Oil Co. is really having its hands full in attempting to complete its Suisun wildcat in Solano County at the eastern end of Suisun Bay in the so-called San Francisco Bay region where a probable commercial accumulation of natural gas has been found. This wildcat, 2-1 Suisun Community in 25-3n-1w, has been cemented for about the eighteenth time and strenuous efforts have been made to keep it under control. During the early stages gas began erupting around the well and up through the soft surface formation. In addition gas started coming to the surface between the 5½ and 9⅝-in. casing and to correct this condition four holes were shot at 2,400 ft. and 400 sacks of cement put away behind 1,000 lb. pressure. This wildcat indicated a potential daily production of about 10,000,00 cu. ft. some time ago and for this reason it is believed quite probable that Standard has discovered a new gas field at this point. Actual completion of this wildcat is dependent upon how soon corrective measures are completed and actual control assumed. The difficulty experienced by the eruption of gas around the derrick is not unusual in this region which is covered by a silt and loose surface formation. Bottom of the hole is 7,300 ft. and 5½-in. casing has been cemented at 6,779 ft. This is substantially deeper than the equivalent of this gas zone has been found in other nearby fields and the zone in 2-1 Suisun Community is somewhat thicker and might therefore prove more prolific.

Standard's recent completion of 1 Woods Community on Roberts Island in the delta region in 23-1n-5e has been shut in pending the laying of a pipe line to connect up with existing facilities. To connect this well with the northern end of the Stanpac or facilities of the P. G. & E. will only require about 10 miles of 8-in. line. No time will be lost in tying in this new gas field with existing facilities as conversion of the southern part of the Stanpac gas line to oil use will necessitate maximum production of gas fields in the delta region next winter to meet decreased deliveries from the San Joaquin Valley by reason of the conversion of the former gas line. Completion of 1 Woods Community on Roberts Island opened up a new commercial gas field about 8 miles southeast of the McDonald Island gas field which was also discovered by Standard Oil Co. This new well is located about 1 mile west and slightly north of 1 Woods Community, which Standard drilled and abandoned in 24-1n-5e.

Thick Temblor Zone Encountered At Jacalitos

Wilshire Oil Co. is expected to complete a good flowing well in the Jacalitos field of Fresno County within the next few days as the company has cored 40 ft. of good-looking and apparently well-saturated oil sand in 58-26-E in 26-21s-15e. This is the largest amount of Temblor oil sand cored in any well to date and should result in somewhat larger production. This well is about 2,500 ft. south of the discovery well which was 38-26 in the same section. Casing has been cemented at 4,345 ft., top of the oil sand is 4,352 ft., and bottom of the hole is at 4,395 ft. The oil sand cored in 58-26-E is almost double the amount of oil sand found in the average well in this field. This is of special interest because the present well is the most southeasterly well in the field and although down on the dip of the anticline is only 12 ft. lower structurally than 45-26, which is 2,500 ft. to the west and the highest in the field to date. Numerous wildcats have been drilled in the Jacalitos district in past years, but until Wilshire Oil Co. found the pay all previous tests have been unproductive and were accordingly abandoned. Texas Co. is drilling ahead in a wildcat east of Jacalitos in 32-21s-16e and is apparently expecting a buttress sand east of the Jacalitos anticline.

E. A. Parkford is proceeding with his development program in the productive area he discovered at the southern tip of the South Belridge field a month or two ago and should have his fourth well completed within the next few days. The productive sand is comparatively shallow and is located between 920 ft. and 1,150 ft.

SAN JOAQUIN VALLEY COMPLETIONS

Belridge, North, Kern County: Tide Water Associated Oil Co. 35-21 Belridge, 21-27s-20e, flowed 598 bbl., 31.5-gravity, 0.5 per cent cut, 1,000,000 cu. ft. gas, 24/64-in. bean, pressures 1,500/2,900 lb., T.D. 8,570 ft., gun perf. 830 ft. blank liner at 8,050-8,174 ft., perf. 8,517-67 ft., recompleted in Wagonwheel zone of Eocene age, originally completed in July 1942 in R zone above Wagonwheel zone flowing 120 bbl. clean 53.4-gravity oil, and 4,000,000 cu. ft. gas from 8,140 ft., top Temblor 6,092 ft., N point 7,387 ft., Q point 7,943 ft., R point 8,030 ft., Wagonwheel 8,518 ft.

Greeley, Kern County: Standard Oil Co. 11-35 Kern County Land, 18-29s-26e, flowed 2,525 bbl., 35.1-gravity, 0.3 per cent cut, 2,777,000 cu. ft. gas, 48/64-in. bean, pressures 990/1,080 lb., T.D. 11,510 ft., 60-mesh perf. 11,391-11,508 ft., completed in Rio Bravo and Vedder zones of Miocene age, top Rio Bravo 11,413 ft., top Vedder zone 11,450 ft.

Kettleman North Dome, Fresno County: Standard Oil Co. 6-27-J fee, 27-21s-17e, recompleted flowing 1,396 bbl., 37.6-gravity, 0.5 per cent cut, 1,235,000 cu. ft. gas 38/64-in. bean, pressures 750/800 lb., T.D. 8,806 ft., deepened from upper to lower Temblor zone of Miocene age.

McKittrick, Kern County: Richfield Oil Corp., 1 Lucas-Ninkovich, 11-30s-21e, abandoned because drill pipe stuck and could not be worked loose and recovered, T.D. 566 ft., derrick has been skidded 30 ft. to the east for new start.

Rio Vista, Sacramento County: Standard Oil Co. 1-2 Midland fee, 5-3n-3e, flowed 23,206,000 cu. ft. gas, 54/64-in. bean, pressures 1,560/1,775 lb., T.D. 4,275 ft., 60-mesh perf. 4,056-4,274 ft., completed in Emigh gas zone of Cretaceous age, brown shale marker 3,590 ft., green sand 4,040 ft., white sand 4,208 ft.

Activity Increase in San Martinez Field Expected

Drilling operations in the San Martinez field located immediately west of the Del Valle field of Los Angeles County may show an increase in drilling operations in the near future if Standard's 4 Sepulveda proves to be a good flowing well. A short time ago Standard completed 3 Sepulveda in a new zone and this might result in considerable extension work. This well instead of being completed in the Modelo zone of Miocene age was finished in a hitherto unknown zone in the overlying Pliocene. Standard's 3 Sepulveda is the most easterly well drilled in the San Martinez field up to the present time and thus the discovery of a prolific zone in the Pliocene indicates the possibility that acreage east of present drilling might be found productive in the Pliocene as well as in the Miocene. This new Pliocene zone, which will probably be known as the Sepulveda zone, is located about 250 ft. above the top of the Miocene and may prove to be of considerable importance from a production standpoint. Previous to completion of 3 Sepulveda, all wells completed in the San Martinez and Del Valle fields were finished in the Modelo of Miocene age. In addition, the completion of this well tends to indicate the possibility that the intervening area between San Martinez and Del Valle may be found productive and thus link the two fields. It has been generally believed that the San Martinez fault quite definitely prevented any connection between the two fields. The discovery is important to operators at this time as neither the Del Valle or San Martinez fields has shown exceptional production activities. Water trouble and failure of wells to show sustained production over a period of time have proved important factors in keeping production within bounds. In addition to 4 Sepulveda, which Standard has already started, Ohio Oil Co. has location in for 4 Vasquez, which is located on property adjoining the former property.

COASTAL DISTRICT COMPLETIONS

Ventura Avenue, Ventura County: Lloyd Corp. 1 Lloyd, 24-3n-23w, flowed 920 bbl., 32.5-gravity, 3 per cent cut, 800,000 cu. ft. gas, 34/64-in. bean, pressures 700/1,100 lb., T.D. 11,406 ft., perf. 10,730-11,404 ft., completed in deep Lloyd zone of Pliocene age.

Many New Wells Under Way At Wilmington and Torrance

Removal of restrictions by the granting of exceptions to operators in the Wilmington and Torrance fields is leading to the starting of numerous new wells. The shortage of drilling crews will not allow operators to start many new wells at this time but will enable them to stretch out the amount of work over several months. If sufficient number of drilling crews was available, it is quite likely there would be 15 to 20 wells drilling in the Wilmington and Torrance fields. This additional drilling is being permitted and encouraged because this work will result in increased production of heavy crude oil which is required to meet the need for fuel oil. Development of the eastern end of the Torrance field was started several months ago but because this drilling was being done on less than 40 acres work had to be suspended under the provisions of M-68. Exceptions will now permit a resumption of this work because the area in question will yield new wells capable of pumping on an average about 100 bbl. of heavy crude oil per day. The sand present in the eastern end of Torrance is an extension of the Ranger zone which is productive in the Wilmington field. The Ranger does not extend over the entire Torrance field but merely laps over several hundred acres in the eastern section of the field. Some operators designate this lap-over as the Wilmington-Torrance area to keep it separate from both the Torrance and Wilmington fields. It is one of the few cases where oil zones in one field overlap productive zones in another.

The great attempt under way to develop the maximum amount of heavy crude oil possible has led operators in the Brea Olinda field to undertake additional drilling and future work depends upon what results from present drilling. Union several weeks ago extended the productive limits of the Stearns property several thousand feet to the south and the company is now drilling in between original production and the new outpost. This extension work did not come as a surprise, however, as company engineers have always regarded the Stearns property, which is owned in fee, as only partially developed. The company would rather hold back development but is now relying on the lease to provide additional quantities of heavy crude oil. Shell Oil Co. has one new well under way on the Orange lease in this area. In the Yorba Linda district where Shell Oil Co. is expected to definitely prove up the existence of a new oil field producing heavy crude oil, work has been going along slowly but surely. Shell is rigging up pumping equipment on 77-16 Olinda fee property 4 at 2,040 ft. and is making good progress with 55-16 on the same property. This work will be a confirmation of what was found in a core hole drilled several years ago but which was shut in when crude oil was found. This area only requires a 2,000-ft. hole to finish and for this reason it will not take long to develop substantial production of heavy crude oil if the company desires.

LOS ANGELES BASIN COMPLETIONS

Chino wildcat district, San Bernardino County: Union Oil Co. 1 Newman Brothers, 2-3s-8w, abandoned in gray sand, T.D. 4,868 ft., no showings of oil or gas logged.

Richfield, Orange County: Hamilton & Sherman, 3-2 Kraemer, 31-3s-9w, abandoned in gray sand and shale, T.D. 5,185 ft., Kraemer zone only consisted of a small amount of oil sand and this tested wet.

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KANSAS, NEBRASKA

Holcomb Gas Field Extended Five Miles Northeast

By CARL HOOT

KANSAS activity continued its upward trend with 44 completions reported last week, 10 wells over the previous week. While the weekly average for August is up in comparison with the early summer months, it is considerably less than the average of 51 for the same period last year.

The Holcomb gas area was extended 5 miles northeast when the Kansas & Nebraska Pipe Line Co. 1 Layman, C 13-24-34w, flowed 1,900,000 cu. ft. of gas from Florence sand at 2,697-2,733 ft. The well is 7 miles west of Garden City.

With a number of new pools opened over the past few months and new producing horizons added to old fields, Kansas' daily average production is nearing the 300,000-bbl. mark. Last week's production of 290,050 bbl. fell off 6,950 bbl. from the previous week when daily average production reached 297,000 bbl., an all-time high for the state.

New Fields Named

Barry and Dorr were the names recommended by the Kansas Nomenclature Committee for two new pools in Rooks County. In the western part of the county and some 7 miles from nearest production, Continental 1 Barry, NE cor. 11-9-19w, made a small producer from the Arbuckle at 3,460 ft. The well is approximately in the center of a large untested area surrounded by the Zurich, Dopita, Webster and Morel pools.

On the east side of the county, Cities Service 1 Dorr pumped 47 bbl. of oil a day from Lansing-Kansas City lime. The well is in the NE NW NE 20-9-16w, and is about 4 miles west of the Laton pool.

An increase in field activity was noted in the Peace Creek, Kraft-Prusa and Lindsborg pools where completions were seven, five, and four, respectively. In the Lindsborg pool of McPherson County, Auto Ordnance 1 Sunquist, a southwest offset to the company's 1 Johnson which gave the pool its second pay in the Simpson sand, was a Viola lime well, pumping 45 bbl. from 3,357-78 ft. After a lull in completions for a few weeks, the Peace Creek pool of Reno County continued its northeastward trend. In the Schweizer area three wells broadened the field and gave it a ¼-mile-north extension. Hinkle Oil 3 Schweizer, a northwest offset to the discovery, pumped 425 bbl. from Viola at 3,711-16 ft. While the Schweizer and Hendrickson areas were slow in development, indications are that this portion of the Peace Creek pool will witness greater activity in the future. In the original Peace Creek area, initial potentials are getting smaller, with at least four edge wells completed dry.

KANSAS COMPLETIONS

Wildcats

Finney County: Kansas & Nebraska Pipe Line Co. 1 Layman, C Sec. 13-24-34w, 1,900,000 cu. ft. gas, Florence 2,697-2,733 ft.

Morris County: Frank Bros. 1 Crocker, SE NW 7-15-7, dry, T.D. 2,700 ft.

Reno County: Texas 1 Wipf, W½ SW SW 36-22-9w, dry, T.D. 3,984 ft., Lansing 3,176 ft., Mississippi lime 3,600 ft., Viola 3,864 ft., Arbuckle 3,885 ft., Arbuckle 3,956 ft., pumped 5 gal. oil and 60 bbl. water.

Hollow Drlg. 1 Wilson, SW cor. 9-23-9w, dry, T.D. 4,024 ft., Lansing 3,254-3,518 ft., Mississippi lime 3,638 ft., Viola 3,841 ft., Simpson 3,921 ft., Arbuckle 3,994 ft.

Rice County: Alpine Oil 1 Gish, E½ NE SE 16-21-10w, dry, T.D. 3,473 ft., sand 2,556 ft., Lansing 3,015-3,303 ft., Simpson sand 3,379 ft., Arbuckle 3,424 ft.

Fields

Big Creek, Russell County: Frontier Fuel 1 Milberger, SW NE 24-14-15w, 2,160 bbl., Gorham sand 3,202-06 ft.

Chase, Rice County: McPherson Drlg. 5-B Patton, NW SW 9-19-9w, pumped 396 bbl., Arbuckle 3,242-47 ft.

Auto Ordnance 1 Pulliam, N½ SE SE 33-19-9w, pumped 136 bbl., Arbuckle 3,205-27 ft.

Cunningham, Pratt County: Skelly 1 Hoagland, E½ SW NW 25-27-11w, pumped 327 bbl., Lansing 3,422-72 ft.

Dopita, Rooks County: Phillips 1 Iruss, NW NE 31-8-17w, pumped 309 bbl., Arbuckle 3,380-89 ft.

Greenvale, Russell County: Phil-Han 4 Soukup, N½ SW SW 3-15-12w, pumped 953 bbl., Lansing 3,067-70 ft.

Hall-Gurney, Russell County: Colorado Pet. 1 Resley, NW SW SE 32-14-13w, pumped 756 bbl., Lansing 2,886-2,910 ft., T.D. 3,156 ft.

Pidgeon Oil 1 Fiegler, N½ NE NE 1-15-14w, pumped 60 bbl., Dodge 2,837-47 ft.

Henne, McPherson County: H & M Oil 1 Platt, S½ SE SE 17-17-1w, dry, T.D. 2,639 ft., Mississippi lime 2,630 ft.

Kraft-Prusa, Barton County: Harry Gore 2 Oeser, NE NW 17-16-11w, flowed 335 bbl. in 12 hr., Lansing 3,058-68 ft.

Shell 2 Gibler, NE NE SE 16-17-11w, dry, T.D. 3,296 ft.

Stanolind 1 Lamatsch, NE SE SW 16-17-11w, pumped 50 bbl., Arbuckle 3,284-90 ft., T.D. 3,292 ft.

Gulf 2 Soeken, NE SW NE 21-17-11w, swabbed 119 bbl. in 2½ hr., Arbuckle 3,241-55 ft.

Shell 2 Disque, NE SW NE 22-17-11w, swabbed 277 bbl. in 4 hr., Arbuckle 3,270-87 ft.

Lindsborg, McPherson County: M & L Oil 2 Johnson, W½ SE SE 7-17-3w, pumped 413 bbl., Viola 3,339-46 ft.

M & L Oil 1-B Helberg, W½ SW NE 18-17-3w, pumped 595 bbl., Viola 3,353-59 ft.

M & L Oil 1 Hoglund, W½ SE NW 18-17-3w, pumped 883 bbl., Viola 3,373-76 ft.

Auto Ordnance 1 Sundquist, W½ NW SW 8-17-3w, pumped 45 bbl., Viola 3,357-78 ft., T.D. 3,380 ft.

McLouth, Jefferson County: McLaughlin 1 McLeod, NW 8-10-20 ft., 17,800,000 cu. ft. gas, Bartlesville sand 1,550-71 ft.

O. J. Connell 1 Handke, SW NE 16-9-20, dry, T.D. 1,382 ft.

Miller et al 2 Edmonds, NE SW 16-9-20, dry, T.D. 1,491 ft.

Oatville, Sedgwick County: Steinbuchel & Murfin 2 Martin N½ SE NW 18-28-1, dry, T.D. 3,533 ft.

Peace Creek, Reno County: Texon 1 Leslie, SW SW SE 30-22-9w, pumped 114 bbl., Viola 3,688-3,704 ft.

Hinkle Oil 3 Schweizer, SW NE NW 31-22-9w, pumped 425 bbl., Viola 3,711-16 ft.

Cities Service 2 Keesling, NW SW 1-23-10w, flowed 120 bbl. in 5 hr., Viola 3,727-39 ft.

Cities Service 3-B Heylmun, SW SE NW 12-23-10w, flowed 108 bbl. in 6 hr., Viola 3,743-48 ft.

Cities Service 4 Sentney, SE NE 14-23-10w, flowed 386 bbl., Viola 3,757-72 ft.

Cities Service 2-A Krey, SW cor. 22-23-10w, dry, T.D. 3,823 ft., Viola 3,809 ft.

Mid-Continent 4 Smisor, SW NE SW 30-22-9w, pumped 201 bbl., Viola 3,668-75 ft.

Ray, Phillips County: Cities Service 2-D Reese, SW SE NE 29-5-20, pumped 100 bbl. in 8 hr., Arbuckle 3,612-16 ft.

Cities Service 1-B Wallgren, SW SE NW 29-5-20w, 2,329 bbl., Lamotte sand 3,646-52 ft.

Silica, Barton County: Lario Oil & Gas 1 Tammen, N½ SW NW 36-20-11w, dry, T.D. 3,390 ft.

J. H. Tatlock 1 Bernstorf, N½ NW NW 30-19-10w, pumped 50 bbl., Lansing 3,046-53 ft., T.D. 3,337 ft.

Trapp, Russell County: Coralena 3 Sellens, N½ N½ SE 17-15-13w, pumped 56 bbl., Arbuckle 3,233-53 ft.

Republic Natural Gas 5 Resner, NE NW 23-15-14w, pumped 250 bbl., Arbuckle 3,358-67 ft.

Champlin Ref. 1-B Tittle, N½ SW SW 14-15-14w, pumped 76 bbl., Arbuckle 3,355-60 ft.

Phil-Han 3 Karst, E½ SE SE 22-15-14w, 3,000 bbl., Arbuckle 3,342-46 ft.

Wilkens, S.E., Ellsworth County: Mid-Plains 2 Alden, N½ SE SE 32-17-9w, 1,015 bbl., Arbuckle 3,229-38 ft.

Zenith, Stafford County: Dasa Oil 4 McComb, E½ SE NE 22-24-11w, pumped 151 bbl., Viola 3,844-49 ft., T.D. 3,853 ft.

MISSOURI-NEBRASKA

ST. JOSEPH, Mo.—Two major companies are starting wildcat oil and gas tests in Northwest Missouri. The Ohio Oil Co. will drill 1 A. J. Schneider in SE SE 18-58n-33w, about 17 miles east and a little north of St. Joseph. This is in Andrew County. A year ago the company drilled south of St. Joseph in Buchanan County. Cities Service Oil Co. soon will drill about 3 miles southeast of Tarkio in Atchison County, Missouri. Jock Garden of Hutchinson, Kans., has moved a heavy rotary rig to the location. General Geophysical Co. will drill the Ohio company's test.

In Nemaha County, Nebraska, Gulf Oil Corp. had a dry hole at 1 Snyder in SE NE NE 34-6n-15e. Particulars were not given. S. J. Brown of Falls City started a test about 1½ miles west of the Falls City pool in C W½ SW SE 24-1n-15e, Richardson County, and shut down at approximately 900 ft.

NEBRASKA COMPLETION

Nemaha County: Gulf Oil 1 Snyder, SE NE NE 34-6n-15e, dry, T.D. 3,515 ft.

ROCKY MOUNTAIN AREA

Tensleep Test in Pilot Butte Area Plugged Back to Embar

By T. R. INGRAM

DENVER, Colo. — Completions in the Rocky Mountain area were confined to four in Montana, of which two are noteworthy. Fulton Petroleum 6 Thompson, in the high-gravity sweet-oil pool on the west side of Kevin-Sunburst, a north offset to a 35-bbl. well which showed water, had only 50 ft. of oil in the hole, but after acidizing with 1,000 gal., flowed at the rate of 120 bbl. a day through a ⅛-in. choke. To the northeast Fulton has two good producers. The other was the Hardrock Oil Co. 5 Waite, which was stepped up from 200 ft. of fluid to an average of 200 bbl. a day on a 10-day test.

Continental Oil Co. 6 Shoshone, Circle Ridge field, Wyoming, which is testing out the north side of that structure, will be a good producer. At 1,270 ft., in porous lime, oil rose to within 400 ft. of the top and it is preparing to test. It had the top of the Embar at 1,020 ft.

Vermillion Oil-Johnson & Horton 1 Government, on the Wyoming side of the Hiawatha field, is a near completion in a sand in the Wasatch. It is 2 miles north and east of 1 Horricks, a 12,000,000-ft. gasser in January 1941. It went to 3,420 ft., and then started plugging back. It has a gas sand at 3,310-30 ft., which looks good for 2,000,000 cu. ft., but first it perforated casing at 2,627-45 ft. and swabbed 10 bbl. of oil a day. There is a difference of opinion as to whether it is an extension of East Hiawatha or a discovery on North Hiawatha, which the operator claims is a separate structure.

General Petroleum is starting a wildcat in the Horse Creek district in Laramie County in its 78-31-G, SW SE SE 31-17n-68w. It is about 20 miles north of the Amerada Petroleum 1 Morton, drilled to 9,385 ft. in 1936.

Pilot Butte Test Dry in Tensleep

Superior Oil Co. 1 Stock, CEL NE NE 21-3n-1w, Pilot Butte district, first well to reach the Tensleep following a discovery in that horizon earlier in the year, went to 6,750 ft., 80 ft. in the Tensleep, and found that horizon dry. It probably will be a producer in the Embar, however, and has plugged back and will perforate at 6,150-6,210 ft., acidize and test. It runs around 400 ft. lower than the discovery, but wells drilling to the north are reported running higher. The discovery had a show of oil in the Embar on the way down but did not stop to test as the Tensleep was the objective. No. 1 Stock is located ½ mile southwest of the discovery.

The Minnelusa Oil Corp. 1 Borra, the deep test in the El Dorado district, Boulder County, has succeeded in cleaning out the hole and is making depth below the old total depth of 6,381 ft., where the Continental stopped operations. That is rather unusual for a well which has stood uncased for nearly 3 years in a formation subject to caving. When operations ceased in 1939 the only casing left in the hole was the conductor pipe. It was filled with heavy mud which sealed off the walls.

The hearing at Casper on August 19 by the subcommittee of the Senate committee on public lands to permit western oil men to present their views on various phases of the public-lands situation in the west was well attended by the oil men. Much evidence in documentary form was laid before the committee for its consideration upon its return to Washington and considerable oral testimony was submitted. It was largely a fact-finding session and nothing came out of it to indicate what action, if any, will be taken by the committee. It then adjourned to hold another session at Artesia, N. M.

Colorado is now leading the Rocky Mountain states in wildcatting and the number of important tests is expected to be increased soon with one or more in northeastern Colorado. Among those on structures geologically approved and being drilled by companies ready and capable of pushing them rapidly to their objectives are tests on Little Poose Creek, Rio Blanco County; Douglas Creek, Rio Blanco County; Chimney Creek, Routt County; Steele Hollow, Pueblo County; and El Dorado, Boulder County. All are now under way.

MONTANA COMPLETIONS

Cut Bank, Glacier County: Santa Rita Oil & Gas 1 Hammond, C NE NE 13-33n-6w, T.D. 3,137 ft., upper Cut Bank 3,090-3,115 ft., show of oil at 3,110-15 ft., no lower Cut Bank sand, bailed 4½ bbl. after standing 20 hr., still testing.

Santa Rita 2 Yunck, SE NE NW 23-34n-6w, T.D. 2,930 ft., 8⅝-in. landed at 2,665 ft., Cut Bank 2,885-2,925 ft., main pay 2,920-25 ft., 200 ft. oil in hole, bailed 5 bbl. after standing 12 hr., still testing.

Kevin-Sunburst, Toole County: Hardrock Oil Co. 5 Waite, NE SE SW 12-35n-2w, T.D. 1,428 ft., contact 1,423-28 ft., 200 ft. fluid in hole, acidized and on 10-day test averaged 200 bbl. per day.

Fulton Petroleum Co. 6 Thompson, SW SW NE 28-35n-3w, T.D. 1,747 ft., contact 1,728-47 ft., 50 ft. oil in hole after standing over night, acidized 1,000 gal., began flowing, pinched to ⅛-in. choke and flowed 5 bbl. an hour.

Permian Basin, Panhandle

(Continued from Page 61)

Sharp 1 Elliott, Section 33, Block B-5, E.L.&R.R. Survey, 2 miles southwest of Shallowater in Lubbock County, is drilling at 5,604 ft. in anhydritic dolomite. In Terry County, Continental Oil Co. 1 Dan Auld, Section 91, Block 4-X, E.L.&R.R. Survey, 10 miles northeast of Brownfield, is going ahead at 5,350 ft. in lime, unchanged. Fast drilling time is being made at Ray Albaugh 1 T. L. Higginbotham, Section 5, Block H, E.L.&R.R. Survey, extreme northern Dawson County, 8½ miles northeast of the Welch pool. Three days after spudding, it was drilling at 1,690 ft. in red rock.

Magnolia's deep well 8 miles north of Stanton in Martin County, 1 Powell, Section 18, Block 35, Township 1n, T.&P. Survey, is at 8,306 ft. in black sandy shale. Humble's Ordovician wildcat northwest of Snyder in Scurry County, 1 Newman, Section 258, Block 97, H.&T.C. Survey, was at 2,736 ft. in lime. In Mitchell County, C. T. McLaughlin 1 Griffin, Section 26, Block 28, Township 1s, T.&P. Survey, 4 miles south of Westbrook, had a hole full of water at 1,090-95 ft. and is now drilling at 1,145 ft. in red rock and salt.

NORTHERN WEST TEXAS COMPLETIONS

Fields

Dean, Cochran County: Continental 7-58 Dean, 669 ft. from E line and 3,253 ft. from S line of lease, in Lge. 58, Martin C.S.L. Sur., elev. 3,697 ft., flowed 1,201 bbl. through casing after acid, pay 4,945 ft., T.D. 4,990 ft.

Dodge-Denman, Howard County: Fleming Oil Co. 7 Dodge estate, 990 ft. from N line and 333 ft. from W line Sec. 15, Blk. 30, Twp. 1s, T.&P. Sur., pumped 195 bbl. after shot, pay 2,620 ft., T.D. 2,950 ft.

Iatan, Howard County: Sinclair Prairie 79 Dodge estate, NW SE Sec. 11, Blk. 30, Twp. 1s, T.&P. Sur., elev. 2,258 ft., pumped 145 bbl. after shot, pay 2,700 ft., T.D. 2,825 ft.

Slaughter, Cochran County: Anderson-Prichard 6 Neal, 440 ft. from N line and 4,819 ft. from W line of lease in Lge. 57, Refugio C.S.L. Sur., elev. 3,678 ft., flowed 659 bbl. through casing after acid, pay 4,910 ft., T.D. 4,989 ft.

Slaughter, Hockley County: Honolulu 25-A Mallet, NW NW Lab. 8, Lge. 52, Scurry C.S.L. Sur., elev. 3,583 ft., flowed 4,986 bbl. through 2½-in. casing outlet after acid, pay 4,986 ft., T.D. 5,021 ft.

G. P. Livermore 5 Glimp, 1,271 ft. from S line and 1,947 ft. from E line Sec. 8, Blk. X, P.S.L. Sur., Elev. 3,542 ft., dry, T.D. 5,064 ft.

Slaughter, Terry County: De Kalb Agricultural Ass'n. 3 Jacobson, 766 ft. from S line Sec. 6, Blk. D-11, John H. Gibson Sur., location abandoned.

De Kalb Agricultural Ass'n. 4 Jacobson, SW SE Sec. 6, Blk. D-11, John H. Gibson Sur., elev. 3,534 ft., pumped 146 bbl. oil plus 2½ per cent water after acid, pay 5,024 ft., T.D. 5,062 ft., P.B. 5,044 ft.

Wasson, Gaines County: Mabee Oil & Gas Co. 1-A Oil Development Co. (was 1 N. W. Willard), SW NE Sec. 39, Blk. AX, P.S.L. Sur., southeast side of pool, elev. 3,523 ft., flowed 464 bbl. through ¾-in. choke on tubing after acid, pay 4,910 ft., T.D. 5,000 ft.

Belfort Oil Co. 2 E. P. Stanford, SW NE Sec. 836, Blk. D, John H. Gibson Sur., elev. 3,681 ft., flowed 640 bbl. through ¾-in. tubing choke after acid, pay 4,925 ft., T.D. 5,150 ft.

West Andrews, Andrews County: Phillips 3 University-Andrews, 660 ft. from N line and 1,980 ft. from W line Sec. 31, Blk. 10, University Survey, ¼ mi. SW of deep discovery well, flowed 804 bbl. in 15 hr. through tubing after acid, anhydrite 1,323 ft., Simpson 7,680 ft., Ellenburger 7,740 ft., pay 7,901 ft., T.D. 7,971 ft.

TEXAS PANHANDLE COMPLETIONS

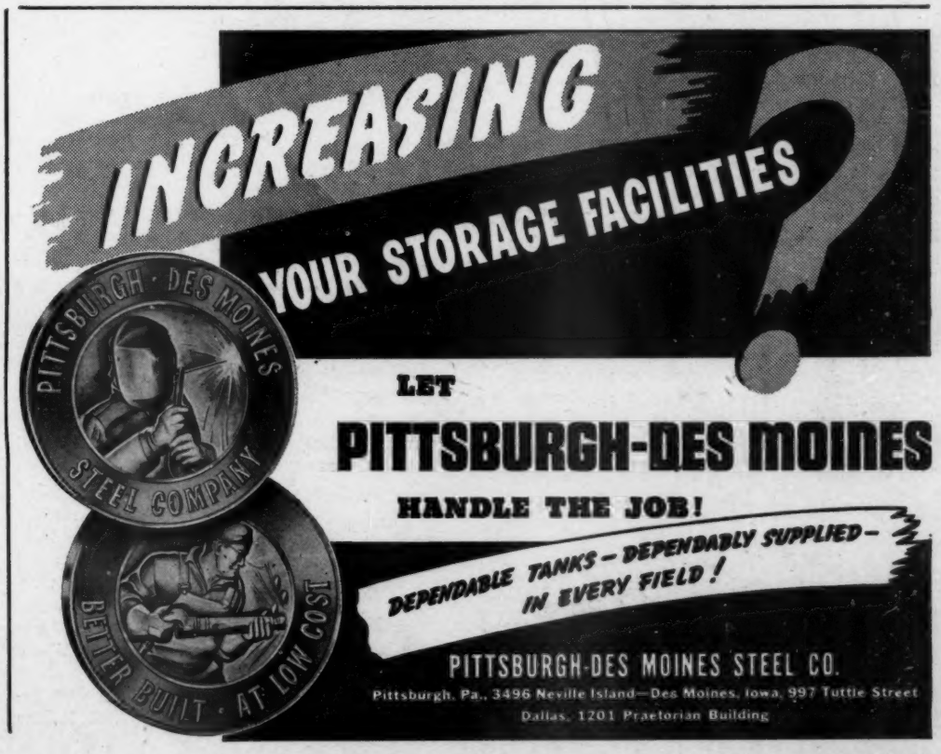
Gray County: Phillips 1 Gatsey, Sec. 155, Blk. B-2, 8,600,000 cu. ft. gas, pay 2,625-2,756 ft. after shot, T.D. 2,812 ft., P.B. 2,756 ft.

Phillips 1 Lehaman, Sec. 185, Blk. B-2, flowed 48 bbl. of oil, no shot, T.D. 2,999 ft.

SOUTHEAST NEW MEXICO COMPLETIONS

Grayburg, Eddy County: Danciger 7-X Turner-B, 17-17-31, flowed 120 bbl., pay 3,365-3,447 ft.

Square Lake, Eddy County: Barney Cockburn 6 Etz, SE SW 35-16-30, flowed 374 bbl., natural, pay 2,980-3,004 ft.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TEXAS GULF COAST

Outpost Test of Stewart Field Has Only Slight Shows of Oil

By F. L. SINGLETON

HOUSTON, Tex.—W. S. Boyle 1 Pagel, 5,000 ft. due west of the discovery well of the Stewart field, Jackson County, which defined the 4,900-5,000-ft. discovery pay the previous week, is now bottomed at 6,050 ft. and a decision was to be made whether or not to cement for a production test following a series of side-wall cores which carried slight showings of oil. The cores were taken on the strength of an electrical survey, and while some cores were missed at intervals from 5,000 to 5,700 ft., several of the cores showed possible production.

Ohio 1 McDonald, a wildcat located north of Bay City, Matagorda County, which has been in the process of completion for the past several weeks, was officially completed for an initial production of 309 bbl. daily through a ⅛-in. choke. Tubing pressure was 1,210 lb. and shut-in casing pressure 1.375 lb. Total depth is 8,692 ft. with production from casing perforations opposite the Frio sand at 7,870-73 ft. No showing of salt water was reported. The company has started drilling operations on an offset, while Sun Oil Co. is engaged in drilling an outpost location.

Superior 1 E. G. Frost, 3 miles northeast of the Lake Creek field, Montgomery County, showed possibilities of opening a new Wilcox sand discovery when it flowed gas and wash water on a 7½-hour drill-stem test through perforated casing at 13,025-40 ft. Working pressure built up to 1,000 lb. but dropped to 150 lb. in 6½ hours. The perforations were cemented off and the well is drilling ahead in shale below 13,217 ft. Other showings up the hole are reported to have been logged, but details have not been released.

Although still in the testing stage, Shell 1 Schiurring, a wildcat 5 miles due west of the town of Garwood, Colorado County, has opened a new Yegua sand field for the district. Casing was reperforated at 6,143-45 ft., and the well is flowing at the daily rate of 114 bbl. of pipe-line oil and 36 bbl. of water through a ¼-in. choke. The gas volume was 2,630,000 cu. ft. daily with tubing pressure 2,075 lb. and casing pressure 2,250 lb. Although the well is located on a block of several thousand acres, sufficient protection is held by other companies which should result in an early development program.

Jefferson County Wildcat Proves Failure

Hebert & Smith 1 Deaton, midway between the Fannett and La Belle fields, Jefferson County, which loomed as a probable pool opener the previous week, has been abandoned at a total depth of 9,500 ft. This well attempted to blow out at a depth of 8,868 ft., but an electrical survey failed to show encouragement. In the meantime, Amerada 1 Sullivan, 1½ miles northeast of Velasco, Brazoria County, is cutting and pulling stuck drill pipe at a depth of 7,183 ft., where pipe was stuck due to an attempted blowout the previous week.

In the Alief area, Harris County, Pure 2 Seadous, H. K. Lewis Survey, was drilled to a total depth of 8,630 ft. and the hole has been plugged back to 7,990 ft., where a drill-stem test was to be made. Details as to where the sand section was logged have not been released.

Production of the Mayo and Harmon fields, Jackson County, was brought closer together with the completion of Stanolind 1 H. A. Meyer, which marked up a 1,000-ft.-south extension to the Mayo field. Completion was made by perforating casing at 5,326-52 ft., and the well flowed 86 bbl. daily through a ⅛-in. choke. The well is located south of Houston Drilling Co. 1 Stroubal and about 2,500 ft. northeast of Gulfboard 1 Dale Burditt.

Indications that the south limits of the Mercy field, San Jacinto County, may have been reached was indicated by the recovery of salt water in Atlantic 1 Beshell, about ½ mile south of production. The test was made in the discovery Wilcox sand at 8,282-88 ft., and the perforations had been squeezed off at the end of the week.

Location for an interesting test was made in the Katy area by Humble Oil & Refining Co. The well is 1 L. L. Scharff in the J. W. McCutcheon Survey, just across the Waller County line in Harris County, being on the extreme northeast flank of this huge structure which produces gas-distillate. During the past several months, leasing and royalty trading around the flanks of this structure has been extremely heavy with some companies paying as much as $50 per acre for outside acreage. This is the second outpost well to be started in the area, being located northeast of a projected deep test now being drilled on the south flank by the Houston Oil Co.

TEXAS GULF COAST COMPLETIONS

Wildcats

Jackson County: J. A. Gray et al 1 Hall, Rose & Sample, dry, T.D. 4,760 ft.
Jefferson County: Hebert & Smith 1 Deaton, dry, T.D. 9,500 ft.
Wharton County: General Crude 1 Security Bank & Trust Co., dry, T.D. 6,515 ft.

Fields

Boling, Wharton County: Danciger 1 Mullins, 528 bbl., ¼-in. choke, perf. casing 2,744-62 ft., T.D. 2,803 ft.
Maubro, Jackson County: Humble 3 Egg, 576 bbl., ¼-in. choke, sand 5,228-38 ft.
Mayo, Jackson County: Stanolind 1 Meyer, 86 bbl., ⅛-in. choke, perf. casing 5,326-52 ft., T.D. 5,522 ft.
Tide Water 1 Ratliff, 16,500,000 cu. ft. gas ⅛-in. choke, perf. casing 5,324-27 ft., T.D. 5,600 ft.
North Bay City, Matagorda County: Ohio 1 McDonald, 309 bbl., ⅛-in. choke, perf. casing 7,870-73 ft., T.D. 8,692 ft.
North La Ward, Jackson County: Magnolia 1 W. C. Moody, 4,500,000 cu. ft. gas, open tubing, perf. casing 6,482-87 ft., T.D. 7,617 ft.
Stanolind 1 Unit 2 Four Way Ranch, 80 bbl., ⅛-in. choke, perf. casing 5,217-22 ft., T.D. 5,225 ft.
West Beaumont, Jefferson County: Stanolind 7 Treadway Land Co., 99 bbl., ⅛-in. choke, top sand 5,380 ft., T.D. 5,388 ft.
West Ranch, Jackson County: Magnolia 239-A West Ranch, 110 bbl., 7/64-in. choke, perf. casing 5,570-80 ft., T.D. 5,590 ft.

LOUISIANA GULF COAST

St. James Parish Test Fails To Log Oil or Gas Showings

By F. L. SINGLETON

NEW ORLEANS, La. — The Louisiana Gulf Coast witnessed another quiet week of developments. Several wildcats had reached critical stages while field operations remained at a low ebb, with only a few fields listing more than two operations.

Two of the most advanced tests in St. James and Terrebonne parishes were temporarily shut down for minor repairs. Cities Service 1 Karskein, located in the Convent area in 42-13s-16e, St. James Parish, was preparing to drill ahead after making an electrical survey at 10,506 ft. No shows of oil or gas were reported. Southeast of Morgan City, Terrebonne Parish, Humble 1-B Continental Land & Fur Co. was scheduled to resume drilling after making repairs to the rig at a depth of 10,330 ft.

Gulf 1 Delta Securities Co., a prospective pool opener located 14 miles southwest of New Orleans, St. Charles Parish, was coring in shale below 6,512 ft., and for the first time in several weeks no showings of oil or gas were reported. Although no drill-stem tests have been made, the well is generally looked upon as a pool opener in view of the showings that have been logged below 2,200 ft. These showings have been in the Pliocene-Miocene section and have been logged at intervals to a depth below 5,700 ft.

In the South Roanoke field, Jefferson Davis Parish, Union Sulphur Co. has completed another gas-distillate producer as 1-A Anding, 2-9s-4w, flowed at the estimated rate of 2,000,000 cu. ft. of gas daily through a 16/64-in. choke, and an unestimated amount of distillate. Total depth is 9,646 ft., with broken sand showing gas logged at 8,543-92 ft. and gas sand at 8,652-62 ft. Five and one-half-inch casing was cemented at 8,690 ft. and completion was made by perforating casing at 8,654-61 ft.

The Texas Co. marked up an extension for the Horseshoe Bayou field, St. Mary Parish, as 7 St. Mary Parish Land Co., in 10-17s-9e, tested gas and some distillate on a drill-stem test through perforated casing at 10,200-50 ft. Working pressure built up to 3,500 lb. Total depth is 10,952 ft.

In the Reddell area, Evangeline Parish, where Continental-Humble 2 Pardee was recently abandoned, the following geological markers were released: With the hole bottomed at 12,688 ft., the Jackson was topped at 8,355 ft., Moody Branch at 8,565 ft., Cockfield at 8,651 ft., Yegua at 8,685 ft., Ceratobulimina 9,068 ft., Cook Mountain 9,125 ft., Sparta 9,700 ft. and the Wilcox at 10,588 ft.

In the Grassy Lake area, St. Martin Parish, a block of approximately 7,000 acres is reported to have been assembled on all sides of the lake, and a deep test is expected to be drilled in the near future. The block centers around Township 15s-13e, and it has been worked extensively with gravity meter.

LOUISIANA GULF COAST COMPLETIONS

Wildcats

Ascension Parish: Humble 1 Gautreau, dry, T.D. 10,700 ft.
Washington Parish: Humble 1 Gaylor Container, dry, T.D. 7,583 ft.

Fields

Bastain Bay, Plaquemines Parish: Phillips 2 Fasterling, dry, T.D. 10,702 ft.
Chacahoula, La Fourche Parish: Sun 14 Dibert Stark & Brown, dry, T.D. 7,631 ft.
Garden Island, Plaquemines Parish: Texas 57 State, 162 bbl., ⅛-in. choke, perf. casing 5,840-86 ft., T.D. 7,000 ft.
Paradis, St. Charles Parish: Humble 5 Manufacturers Record Publishing Co., 451 bbl., ⅛-in. choke, perf. casing 10,060-70 ft., T.D. 10,240 ft.
Starks, Calcasieu Parish: W. T. Burton 7 Industrial Lumber Co., 107 bbl., 13/64-in. choke, perf. casing 3,700-20 ft., T.D. 4,050 ft.
Stella, La Fourche Parish: California 1 Delta Minerals, 120 bbl., oil plus 10 per cent salt water, ⅛-in. choke, perf. casing 6,327-35 ft., T.D. 8,502 ft.
California 3 State, 190 bbl., ⅛-in. choke, perf. casing 7,630-42 ft., T.D. 7,655 ft.
West Hackberry, Cameron Parish: Stanolind 63 State, 110 bbl., ⅛-in. choke, perf. casing 9,883-9,900 ft., T.D. 10,000 ft.

Applications of Time Logs to Porosity Studies in Kansas Wells

(Continued from Page 56)

In some areas the Lansing-Kansas City limestone has been fairly well tested and the prospects for production can be more easily determined. In other areas little testing of the Lansing-Kansas City limestone has been done, and the possibilities for production are unknown. Time, electric, radioactivity, and sample logs have been used to good advantage in studies of areas thought to have Lansing-Kansas City limestone prospects. It has been found that each method of logging a well may contribute valuable information not available in the others. For example, a time log often is the foundation for better interpretation of the sample log of the same well.

By using all the data, a better understanding of the operator's problem is available, and in many cases the correct answer to his problem is found.

ILLINOIS FIELD REPORT

Confused Spacing Regulations Slow Illinois Operations

MATTOON, Ill.—Oil operations in Illinois totaled 227 at the end of the week, a decrease of 13 from the previous week. The decline in Illinois operations during the past few weeks has been brought about by the lack of any recent important discoveries coupled with a confused spacing situation. This lack of discoveries has also diminished the number of inside locations to be drilled so that first reports have also been on the down grade. There were 31 first reports for the past week, as compared to 41 for the previous week.

Confused Illinois operators continue to wonder about the status of state and federal drilling regulations. Late last week the state Department of Mines and Minerals asked Atty. Gen. George F. Barrett to rule whether federal well spacing order M-68 shall supercede the state oil and gas conservation law which limits drilling to one well to 20 acres in limestone formations.

St. Clair County Test to Be Acidized

Although Madison County continued to be the most active spot in the Illinois basin during the past week, most operators were watching the outcome of Prichard 1 James T. Halliday, SE NE NW 31-2n-7w, St. Clair County, where Trenton saturation had been reported. Plug was drilled at the 1 Halliday but operators were to acidize before testing. Pay cored at the test was streaked and looked similar to cores found in the St. Jacobs pool, 14 miles to the northeast. A drill-stem test recovered several feet of oil-cut mud and casing was set at 1,926 ft. with the hole bottomed at 1,994 ft.

The 1 Halliday is believed to have strengthened the prediction that several additional Trenton oil fields will be found along the western rim of the Illinois basin.

Meanwhile, the first dry hole was completed in the St. Jacobs pool, Madison County. It was the Burdette 1 Oliver A. Frey, SW 22-3n-6w, and was abandoned at a total depth of 2,475 ft. when no commercial pay could be found. The well was acidized and reacidized before abandonment.

ILLINOIS COMPLETIONS

Wildcats

Clinton County: M. L. Dickey 1 Murphy, NW, NW SW 16-3n-3w, dry at 984 ft., base Pennsylvanian 841 ft., Golconda 848 ft., Cypress 930 ft., Weiler 960 ft.

W. D. Shedden 1 Kleibocker, SE SE SW 21-2n-1w, dry at 1,450 ft., Glen Dean 1,108 ft., Hardinsburg 1,123 ft., Golconda 1,165 ft., Barlow 1,239 ft., Cypress sand 1,306 ft., Paint Creek 1,428 ft., Benoist 1,436 ft.

E. J. Ruwaldt 1 Twiss, NE SW NE 23-2n-5w, dry at 3,044 ft., Golconda 725 ft., Cypress sand 810 ft., Paint Creek 930 ft., Benoist 1,004 ft., Aux Vases 1,057 ft., Ste. Genevieve 1,097 ft., St. Louis 1,145 ft., Louisiana 2,125 ft., New Albany 2,147 ft., Devonian 2,192 ft., Maquoketa 2,773 ft., Trenton 2,944 ft.

Coles County: F. D. Walker et al 1 Sutton, NW SE 36-14n-7e, dry at 1,945 ft., Cypress 1,639 ft., Benoist 1,720 ft., Ste. Genevieve 1,825 ft., Rosiclare 1,836 ft., McClosky 1,844 ft., junked hole.

W. L. Kopf 1 T. D. Basler, SW SE NE 26-14n-9e, dry at 1,054 ft., Osage 487 ft., Kinderhook 943 ft., Devonian 1,050 ft.

Cumberland County: Daugherty et al 1 Wilcox, SE SE SW 21-9n-10e, dry, old well deepened from 509-1,400 ft.

Edgar County: Don O. Russell et al 1 Whiteside, SW NW 14-13n-14w, dry at 1,228 ft., Devonian 1,199 ft.

Edwards County: C. J. Westland 1 J. B. Roosevelt, W½ NW SW 18-2s-14w, dry at 3,175 ft., Menard 2,260 ft., Glen Dean 2,506 ft., Golconda 2,636 ft., Barlow 2,756 ft., Weiler 2,822 ft., Paint Creek 2,869 ft., Benoist 2,902 ft., Renault 2,952 ft., Aux Vases 3,016 ft., Ste. Genevieve 3,056 ft., McClosky 3,133 ft.

Franklin County: H. H. Wegener 1-L Neff Coal Co., NW SE SE SW 1-7s-2e, dry at 2,114 ft., Kincaid 1,638 ft., Palestine sand 1,790 ft., Menard 1,905 ft., Tar Springs sand 2,096 ft.

Gallatin County: Skelly 1 Schmidt, SE SW NW 15-8s-9e, pumped 117 bbl., 20-qt. shot 2,502-13 ft., Cypress sand 2,498-2,516 ft., T.D. 2,520 ft., *pool opener.*

Aetna et al 1 Foster, SE SE NE 10-8s-9e, pumped 12 bbl. oil and 2 bbl. water, 310-qt. shot 2,820-85 ft., Aux Vases sand 2,816-44 ft., T.D. 3,027 ft., P.B. 2,885 ft., *extends North Inman pool.*

Hamilton County: Texas 1 S. Minton, E½ SE NE 20-4s-7e, pumped 123 bbl., natural, Aux Vases, T.D. 3,531 ft.

Jasper County: R. B. Buchanan 1 Deckhard, W½ NE NW 20-5n-14w, dry at 2,972 ft., Glen Dean 2,356 ft., Golconda 2,445 ft., Barlow 2,528 ft., Weiler 2,610 ft., Paint Creek 2,690 ft., Benoist sand 2,760 ft., Renault 2,800 ft., Aux Vases sand 2,845 ft., Ste. Genevieve 2,857 ft., Rosiclare 2,870 ft., Fredonia 2,906 ft., St. Louis 2,966 ft.

Olson Drlg. et al 1 R. L. Berry, SE SW SE 15-5n-9e, dry at 3,182 ft., Glen Dean 2,524 ft., Hardinsburg 2,543 ft., Golconda 2,600 ft., Barlow 2,672 ft., Weiler 2,754 ft., Paint Creek 2,868 ft., Benoist sand 2,908 ft., Renault 2,959 ft., Aux Vases sand 2,966 ft., Ste. Genevieve 3,034 ft., Rosiclare 3,044 ft., Fredonia 3,059 ft.

Jefferson County: Roy Powers 1 A. T. Hayes, NE SW SE 5-1s-3e, dry at 2,665 ft., Kincaid 1,645 ft., Degonia 1,675 ft., Clore 1,715 ft., Palestine 1,625 ft., Menard 1,765 ft., Tar Springs 1,990 ft., Glen Dean 2,054 ft., Hardinsburg 2,080 ft., Golconda 2,167 ft., Barlow 2,260 ft., Cypress 2,280 ft., Weiler 2,295 ft., Paint Creek 2,390 ft., Benoist 2,430 ft., Renault 2,487 ft., Aux Vases 2,510 ft., Levias 2,568 ft., Rosiclare 2,587 ft., Fredonia 2,610 ft., McClosky 2,625 ft.

E. M. Self 1 J. German, NW SE SE 16-2s-1e, dry at 2,305 ft., Glen Dean 1,633 ft., Barlow 1,808 ft., Weiler 1,835 ft., Paint Creek 1,986 ft., Benoist 2,003 ft., Levias 2,161 ft., Rosiclare 2,215 ft., McClosky 2,284 ft.

Skelly 1 J. F. P. Coal Co., SE SE SW 29-3s-1e, dry at 2,441 ft., Menard 1,493 ft., Glen Dean 1,701 ft., Golconda 1,776 ft., Barlow 1,906 ft., Cypress sand 1,926 ft., Paint Creek 2,042 ft., Benoist 2,123 ft., Renault 2,166 ft., Aux Vases 2,183 ft., Ste. Genevieve 2,270 ft., Fredonia 2,345 ft.

Carter 1 Interstate Coal Co., SW SE 26-3s-1e, dry at 2,936 ft., Kincaid 1,732 ft., Menard 1,965 ft., Tar Springs 2,086 ft., Glen Dean 2,199 ft., Golconda 2,322 ft., Barlow 2,410 ft., Cypress sand 2,468 ft., Benoist 2,610 ft., Renault 2,656 ft., Aux Vases sand 2,672 ft., Rosiclare 2,774 ft., Fredonia 2,855 ft., St. Louis 2,929 ft.

Lawrence County: Hayes Drlg. 1 Harlan, NE SE 30-3n-12w, dry at 2,004 ft., Glen Dean 1,666 ft., Hardinsburg 1,694 ft., Golconda 1,728 ft., Barlow 1,836 ft., Weiler 1,891 ft., Paint Creek 1,970 ft., Benoist sand 1,978 ft.

Marion County: Sinclair 1 Nora E. Sinclair, NE SE SE 11-1n-4e, dry at 3,074 ft., base Pennsylvanian 1,953 ft., Degonia 1,975 ft., Clore 2,022 ft., Menard 2,200 ft., Vienna 2,298 ft., Tar Springs 2,301 ft., Glen Dean 2,437 ft., Golconda 2,481 ft., Barlow 2,603 ft., Cypress sand 2,645 ft., Paint Creek 2,708 ft., Benoist 2,824 ft., Renault 2,843 ft., Aux Vases 2,898 ft., Ste. Genevieve 2,924 ft., Rosiclare 2,948 ft., St. Louis 3,051 ft.

Washington County: J. H. Dorian 1 J. R. McClay, SE NE NW 16-3s-4w, dry at 1,371 ft., Glen Dean 785 ft., Cypress sand 1,062 ft., Benoist sand 1,152 ft., Aux Vases 1,214 ft., Ste. Genevieve 1,320 ft.

White County: S. C. Yingling 1 Eastwood, SE SW NE 20-3s-14w, dry at 1,930 ft., West Franklin 620 ft., Biehl 1,920 ft.

White Eagle Oil Co. 1 Meade, NE NE SE 23-5s-9e, dry at 3,236 ft., Kincaid 1,979 ft., Menard 2,321 ft., Tar Springs 2,465 ft., Glen Dean 2,597 ft., Golconda 2,665 ft., Barlow 2,786 ft., Paint Creek 2,905 ft., Benoist 3,064 ft., Aux Vases sand 3,098 ft., Ste. Genevieve 3,139 ft.

Williamson County: Shell 1-B Madison, SW SW SE 13-8s-3e, dry at 3,217 ft., Menard 2,004 ft., Tar Springs 2,176 ft., Glen Dean 2,284 ft., Hardinsburg 2,348 ft., Cypress 2,575 ft., Benoist 2,834 ft., Aux Vases sand 2,888 ft., Ste. Genevieve 2,956 ft.

Fields

Boulder, Clinton County: Texas 7 Gray Comm., SW NE SE 35-3n-2w, pumped 65 bbl. oil and 20 bbl. water, 8-qt. shot 1,216-20 ft., Benoist sand 1,206 ft., T.D. 1,222 ft., P.B. 1,220 ft.

Texas 1. J. Defend, SW SE SW 35-3n-2w, pumped 33 bbl. in 6 hr., 7-qt. shot 1,197-1,204 ft., Benoist 1,187 ft., T.D. 1,206 ft.

Dale, Hamilton County: Pure 1 J. C. Layman, NW NW SW 17-6s-7e, pumped 214 bbl., 35-qt. shot 2,726-40 ft., Cypress 2,717 ft., T.D. 3,065 ft., P.B. 2,740 ft.

Shell and Pure 3 Rawls, NW SW NW 12-6s-6e, pumped 156 bbl. oil and 21 bbl. water in 21 hr., 10-qt. shot 2,943-50 ft., Benoist sand 2,929-50 ft., T.D. 3,060 ft.

Dundas, Jasper County: Pure 2 Cunningham, NW SW 5-5n-10e, dry at 2,855 ft., Glen Dean 2,775 ft., Barlow 2,434 ft., Cypress 2,537 ft., Aux Vases sand 2,718 ft., Ste. Genevieve 2,769 ft., Rosiclare 2,778 ft., Fredonia 2,788 ft., McClosky 2,842 ft.

Pure 2 Wartsbaugh, SE SE 6-5n-10e, dry at 2,905 ft., Glen Dean 2,326 ft., Barlow 2,473 ft., Cypress sand 2,558 ft., Aux Vases sand 2,750 ft., Ste. Genevieve 2,808 ft., Rosiclare 2,826 ft., Fredonia 2,835 ft., McClosky 2,840 ft.

Pure 2 Hall, SE NE 7-5n-10e, pumped 15 bbl., 230 gal. acid, reacidized 2,000 gal., McClosky 2,830-44 ft., T.D. 2,855 ft.

Pure 1 Spraul, E½ SE SE 18-5n-10e, pumped 156 bbl., perf. 2,805-24 ft., 5,000 gal. acid, McClosky 2,804-06 ft., 2,810-13 ft., 2,818-27 ft., T.D. 2,850 ft., P.B. 2,842 ft.

Fairfield, Wayne County: H. H. Weinert 1 J. and L. Clark, E½ NW NW 12-2s-7e, dry at 3,320 ft., Menard 2,473 ft., Tar Springs 2,601 ft., Glen Dean 2,694 ft. Golconda 2,796 ft., Barlow 2,899 ft., Weiler 2,908 ft., Paint Creek 3,084 ft., Renault 3,197 ft., Aux Vases sand 3,208 ft., Ste. Genevieve 3,248 ft., Fredonia 3,309 ft.

Inman, Gallatin County: Magnolia 2 McGuire, NE NW SW 19-8s-10e, dry at 3,010 ft., Kincaid 1,738 ft., Clore 1,821 ft., Palestine 1,897 ft., Menard 1,980 ft., Waltersburg sand 2,065 ft., Tar Springs sand 2,192 ft., Glen Dean 2,280 ft., Hardinsburg 2,360 ft., Golconda 2,361 ft., Barlow 2,491 ft., Cypress 2,505 ft., Levias 2,823 ft., St. Louis 2,996 ft.

King, Jefferson County: Lewis Prod. 2 State Game Farm, SW NW NE 28-3s-3e, pumped 74 bbl., 30-qt. shot 2,744-60 ft., Aux Vases 2,732 ft., pay 2,738-45 ft., T.D. 2,754 ft.

New Haven, White County: Hiawatha O. & G. 5 J. Vail, SW SW SE 19-7s-11e, pumped 35 bbl., 15-qt. shot 2,453-60 ft., Cypress 2,449 ft., T.D. 2,460 ft.

Parkersburg, Edwards County: Nelson Dev. et al 1 Gadau-Rathcock Comm., NE NE SW 6-1n-14w, pumped 15 bbl. oil and 22 bbl. water, 3,000 gal. acid, perf. 3,118-28 ft., McClosky 3,121-25 ft., T.D. 3,144 ft.

St. Jacob, Madison County: Burdette et al 1 Frey, SW SW SW 22-3n-6w, dry at 2,475 ft., Golconda 545 ft., Cypress 535 ft., Cypress sand 597 ft., Pint Creek 655 ft., Benoist 745 ft., Aux Vases 776 ft., St. Louis 859 ft., Salem 1,090 ft., Devonian 1,778 ft., Maquoketa 2,238 ft., Trenton 2,401 ft.

Sohio Prod. 1 Noll, SW NE NW 21-3n-6w, pumped 83 bbl. oil and 8 bbl. water, 40-qt. shot on bottom, 3,000 gal. acid, Trenton 2,364 ft., pay 2,366-2,450 ft., T.D. 2,474 ft., P.B. 2,400 ft.

Ste. Marie, Jasper County: C. R. Craft 1 Kraus, E½ NW SE 6-5n-14w, pumped 215 bbl. oil and 35 bbl. water, natural, McClosky 2,855-60 ft., 2,865-67 ft., 2,885-88 ft., T.D. 2,905 ft.

St. Paul, Fayette County: T. R. Buell et al 2 Ford, SE NE NW 31-5n-3e, pumped 95 bbl. oil and 75 bbl. water, 10-qt. shot 1,892-1,902 ft., Benoist sand 1,893-1,900 ft., T.D. 1,902 ft.

South Johnsonville, Wayne County: Shell 1 N. Montgomery, NW SW 14-1s-6e, pumped 19 bbl. oil and 8 bbl. water, 10-qt. shot 3,063-76 ft., Aux Vases sand 3,054-69 ft., 3,072-77 ft., T.D. 3,237 ft.

South Lawrence, Lawrence County: L. S. Heath 1 Green, NW NW SE 27-2n-12w, pumped 18 bbl. oil and 20 bbl. water, 20-qt. shot 1,441-51 ft., Biehl 1,441-51 ft., T.D. 2,160 ft., P.B. 1,500 ft.

Storms, White County: Sinclair-Wyoming 1 Myers, SW SW SW 1-6s-9e, dry at 3,173 ft., McClosky 3,080 ft., St. Louis 3,148 ft.

Walpole, Hamilton County: Texas 1 Smith Comm., W½ SW NW 35-6s-6e, flowed 184 bbl., natural, Aux Vases sand 3,102-15 ft., T.D. 3,115 ft.

Ohio Fields

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shot, first Cow Run sand, T.D. 543 ft.

York Township: Swingle et al 3 Carl Weaver, Sec. 25, 220,000 cu. ft. gas, shot, Berea, T.D. 1,162 ft.

Muskingum County, Newton Township: Atha 2 O. A. Krofft, Sec. 13, show gas, shot, plugged, Clinton, T.D. 3,540 ft.

Wayne Township: Ohio Fuel 1 I. E. Moore, Sec. 7, 70,000 cu. ft. gas, Clinton, T.D. 4,147 ft.

Perry County, Coal Township: Preston Oil 209 Sunday Creek Coal, Sec. 36, 5 bbl., shot, Clinton, T.D. 3,752 ft.

Clayton Township: Preston Oil 2 C. W. Ream, Sec 5, 27 bbl., shot, Clinton, T.D. 3,176 ft.

Pure Oil Co. 4 J. A. Pargeon, NW Sec. 7, 65 bbl., Clinton sand, T.D. 3,355 ft.

Industrial Gas Corp. 1 David Woods, SE Sec. 2, 350,000 cu. ft. gas, Clinton sand, T.D. 3,454 ft., Medina drilled through and dry.

Thorn Township: Industrial Gas Corp. 3 Harvey Long, SW Sec. 3, 220 bbl. by flow, Clinton sand, T.D. 2,735 ft.

Reading Township: Industrial Gas 3 A. Wilson, Sec. 12, 450,000 cu. ft. gas, Berea, T.D. 977 ft.

Noble County, Seneca Township: S. E. Ruby 1 Blanch Williams, Sec. 34, 50,000 cu. ft. gas, shot. Berea, T.D. 1,740 ft.

Stark County, Perry Township: East Ohio 1 S. Provost, Sec. 34, 120,000 cu. ft. gas, shot, Clinton, T.D. 4,598 ft.

Pike Township: Lyons Co. 1 F. C. Brenner, Sec. 3, 680,000 cu. ft. gas, shot, Clinton, T.D. 4,798 ft.

Obermiller Bros. 1 J. J. Conroad, Sec. 16, 700,000 cu. ft. gas, shot, Clinton, T.D. 4,755 ft.

Tuscarawas County, Lawrence Township: Ohio Fuel 1 Walter Streb, Lot 71, 160,000 cu. ft. gas, shot, Clinton, T.D. 4,557 ft.

Washington County, Dunham Township: Perdew 1 James Barnett, Sec. 6, dry, Macksburg 800 ft. sand, T.D. 1,391 ft.

Independence Township: H. Jones et al 14 H. J. Patterson, Sec. 23, 60,000 cu. ft. gas, Squaw, T.D. 1,541 ft. (old well deepened from 1,388 ft.).

Wayne County, Plain Township: Ohio Fuel 1 G. E. Kean, Sec. 27, 100,000 cu. ft. gas, shot, Clinton, T.D. 3,315 ft.

EASTERN KENTUCKY

ASHLAND, Ky.—Operations continued on the same general trend in eastern Kentucky this week but no new locations were reported. One gas well was completed and one dry hole reported. However, a study of reports from several of the fields indicates that a number of wells have reached the completion stage and are ready for shooting.

EASTERN KENTUCKY COMPLETIONS

Floyd County: Kentucky-West Virginia Gas Co. 5416 Caroline Salmons, Deerlick Fork, Copperas Creek, dry, T.D. 2,701 ft. in white slate.

Pike County: Kentucky-West Virginia Gas Co. 5409 Thomas Charles, Raccoon Creek, 783,000 cu. ft. gas, T.D. 3,335 ft. in shale, shot.

NORTH LOUISIANA, ARKANSAS

Open New Fields in North Louisiana and Arkansas

SHREVEPORT, La. — Increased wildcat activity in the tristate area was meeting with favorable results. Development during the week included two probable Smackover lime fields in Arkansas, a new middle Wilcox sand discovery in South Central Louisiana, and a probable Eutaw sand discovery in Clark County, North Mississippi.

ARKANSAS

In Miller County, Arkansas, Carter Oil Co. was preparing to run casing preparatory to testing 1 L. E. Orr in 3-16s-28w. With the hole bottomed at 7,700 ft., casing was being cemented to test the Smackover section after good porosity was logged. The Cotton Valley section was topped at 5,979 ft., Buckner lime 7,128 ft., Smackover lime 7,338 ft., oolitic 7,341 ft. Top of the porosity was logged at 7,346 ft.

ARKANSAS COMPLETIONS

Wildcat, Jefferson County: Curtis-Tow Oils 1 Southern Kraft, SE NE 35-3s-11w, dry, T.D. 2,775 ft.

Frank Stratton 2 Stratton, NW SE 35-6s-9w, dry, T.D. 715 ft.

Wildcat, Lonoke County: Raney Bros. 1 Gunter, N½ SE SE 17-5n-10w, dry, T.D. 3,200 ft.

Dorcheat, Columbia County: McAlester Fuel 1 Nipper, N½ NE 20-18s-21w, flowed 225 bbl. distillate, pay 8,874-8,935 ft.

Hillsboro, Union County: D. V. Lacefield 2 Burnside, NW NW NE 24-18s-14w, pumped 27 bbl., pay 2,196-2,204 ft.

NORTH LOUISIANA

Along the middle Wilcox trend of South Central Louisiana, and located 12 miles south of the town of Jena, La Salle Parish, Carter Oil Co. and Phillips Petroleum Co. have apparently opened a new pool on their large block as 2-C State Catahoula Lake in 6-6n-4e, flowed at the daily rate of 225 bbl. of fluid through a 12/64-in. choke. Forty per cent of the fluid was 39-gravity oil and the balance was drilling mud and basic sediment. There was no showing of salt water. Tubing pressure was 400 lb. This well was drilled to a total depth of 4,802 ft., plugged back to 4,200 ft., and the well is testing through perforated casing at 4,090-94 ft.

In Morehouse Parish, Union Producing Co. 1-A Crossett Timber Co. is expected to be tested after the well flowed 11 bbl. oil and 10 bbl. of salt water daily while testing through a ⅛-in. choke. This well was drilled through salt to a total depth of 6,956 ft., and the test was

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Where unvarying low pressure is required

As a district regulator — at distributing or measuring stations — in industrial plants, institutions and housing projects — wherever low pressure gas is consumed in considerable volume, the C-F Low Pressure Regulator gives perfect control. Any inlet pressure up to 100 pounds can be reduced to a constant delivery pressure from 2 to 16 ounces. Fully balanced valve with soft-seat construction for positive shut-off. Inside valve may be removed for inspection without taking regulator from line. Furnished with or without automatic cut-off, a safety feature which closes regulator when line pressure fails, and must be reopened manually. For domestic service or other installations requiring less volume, the C-F House Regulator is unequalled in performance or durability, reducing line pressures as high as 500 pounds to delivery pressures in ounces. There's a C-F regulator for every requirement in the control of either high or low pressures. Specific recommendations will be made on request.

THE CHAPLIN-FULTON MFG. CO.
38 PENN AVE. PITTSBURGH, PA.

CANADIAN FIELDS

Three Deep Tests to Be Drilled in Gaspe Area

By VICTOR LAURISTON

CHATHAM, Ont.—Crude and natural-gasoline production for all Alberta fields for the week ended August 17 averaged 27,545 bbl. daily compared with 27,547 bbl. daily for the previous week and 27,572 bbl daily for the corresponding week last year. The daily average included 26,527 bbl. of crude and 536 bbl. of natural gasoline from Turner Valley and 482 bbl. of crude from outside fields. There were 225 producing wells, 27 drilling, 2 finished 1 new producer, 4 testing, 2 suspended, 12 standing, 2 abandoned, 3 spudded and 2 drilling licenses issued.

TURNER VALLEY COMPLETIONS

North Turner Valley: Major Oils 8, LSD 13, 4-21-3w5, T.D. 7,774 ft., Madison at 7,270 ft., initial production after acidizing, 1,899 bbl. daily.

Home Oil 10, LSD 15, 33-20-3w5, T.D. 7,774 ft., Madison at 7,147 ft., initial production 1,347 bbl. daily with gas-oil ratio 918 cu. ft. and 2,505 lb. bottom-hole pressure, allowable 658 bbl. daily.

TURNER VALLEY LIME TESTS

North Turner Valley: Northwest-Hudson's Bay 7, LSD 14, 8-21-3w5, finished at 8,600 ft. with Madison at 8,169 ft., initial production 15 bbl. hourly, acidized with 2,500 gal. increasing flow to 45 bbl. hourly.

Gaspe Development

A Montreal group headed by Paul Payette with some financial support by western Canada and United States interests has secured petroleum rights on 85,000 acres in the Gaspe Peninsula, in Quebec south of the Gulf of St. Lawrence. The acreage is blocked over two large structures. The development follows nearly a year of geological survey work in the Gaspe area. Russell V. Johnson of Calgary has been retained by the company as consulting geologist. and will leave for the field early in September, with a geological party, to locate the first wells to be drilled. The acreage includes a number of old wells drilled by the Petroleum Oil Trust, an English corporation, including No. 2, drilled about 1897. This test, located low on the flank of the structure, got the lime contact at 2,175 ft. with a flow of 5 bbl. daily, which later dropped to ½ bbl. when the well was abandoned. There is considerable oil in the hole, and it is believed a test higher on structure will get commercial production. The company plans to drill two tests to around 4,000 ft. and a deep test to 8,000 ft. All are expected to reach the Ordovician limestone oil horizons.

British Dominion Operations

British Dominion Oil & Development Corp. of Calgary has taken over the undeveloped acreage in 17-21-3w5 from Atlast Investment Co. and has bought two heavy-duty rotary outfits from the Atlas Drilling Co. The drilling program calls for two simultaneous tests, and work will be started this season. Operations are being financed by a group headed by John Conroy of the National Magnesium Co. of New York and Ewart Angus of Toronto, who have provided $300,000, partly for purchase of British Dominion stock and partly as a loan to be repaid out of production. The British Dominion company has a 25-per cent interest in the two Atlas-British Dominion wells in this section, of which No. 2 is a 676-bbl. producer and No. 3 is drilling in the Blairmore formation below 6,366 ft.

Taber Field

In the Taber field, southern Alberta, Clancey-Hi Test Petroleums 1, LSD 7, 24-9-17w4, is below 2,200 ft., with production expected around 3,200 ft. Standard-C.P.R. 76-17-B, LSD 12, 17-9-16w4, is below 1,800 ft. Standard of B. C. 1, LSD 9, 18-9-16w4, is on the pump, and making around 220 bbl. daily, part of the production being used for drilling fuel. Plains Petroleum 2 has resumed shipments of crude to Winnipeg. Taber acreage has been leased almost as far south as the old Skiff field.

Vermilion Field

In the Vermilion field, eastern Alberta, Serena 1, LSD 9, 25-50-6w4, finished around 1,830 ft., showed 500 ft. of oil in the hole, and has been placed on the pump Vermilion Consolidated-O'Sullivan 1, LSD 3, 6-51-

(Continued on Page 79)

LEGAL

U. S. Department of Agriculture, Forest Service, Milwaukee, Wisconsin, August 25, 1942. Sealed bids in triplicate will be received until 10:00 A. M. Central War Time, September 30, 1942, and then publicly opened, offering bonus for operating rights in connection with gas and oil leases on land located in the State of Ohio, Muskingum County. Separate bids will be received and separate leases issued on each of three blocks as follows: Block I—Portions of sections 10, 11, 14, 15, and 16 Blue Rock Township, T. 12 N., R. 12 W. totalling 733.565 acres more or less. Block II—Portions of sections 2, 3, 4, 9, and 10 Blue Rock Township, T. 12 N., R. 12 W. and portions of sections 33, 34, and 35 in Salt Creek Township, T. 13 N., R 12 W. totalling 1992.62 acres more or less. Block III—Portions of sections 14, 15, 22, and 27 in Salt Creek Township, T. 13 N., R. 12 W. totalling 564.72 acres more or less. The Secretary's policy on protective leases has been superseded and oil and gas leases on this property will permit drilling at any time by the permittee, or as requested by the Secretary of Agriculture to protect the interests of the Government. Award of lease will be made only to bidder who can show sufficient experience and financial resources and prove citizenship. Interested parties may obtain bid documents, lease forms, operating regulations, and exact descriptions of property from the Regional Forester, U. S. Forest Service, 625 North 2nd Street, Milwaukee, Wisconsin.

APPALACHIAN FIELDS

Chestnut Ridge Deep Test Drilling Ahead

PITTSBURGH, Pa.—On Chestnut Ridge, South Union Township, Fayette County, Peoples Natural Gas was drilling at 6,450 ft. in the test on the Walters farm. Here Greensboro Gas Co. has reached 6,004 ft. in 2 Barton and 4,960 ft. in 3 Barton. New Penn Development Co., William E Snee et al have spudded in and started drilling 2 Indian Creek Coal Co.

SOUTHWEST PENNSYLVANIA COMPLETIONS

Armstrong County, Bethel Township: Apollo Gas Co. 1 Sloan Banks, 10,500 cu. ft. gas, Fifth sand 2,057-95 ft., drilled through Bradford, T.D. 3,600 ft.

Clarion County, Red Bank Township: Owens Illinois Glass Co. 1 S. W. Yeaney, dry, through Speechley sand, T.D. 3,254 ft.

Greene County, Jackson Township: Carnegie Natural Gas Co. 1 W. B. Phillips, dry, through Bayard sand, T.D. 3,501 ft.

Monongahela Township: L. J. Houze Convex Glass Co. 2 Ellsworth Dunham, 3,500,000 cu. ft. gas, Big Injun sand 1,521 ft., gas 1,533-45 ft., T.D. 1,547 ft.

Wayne Township: Charles Orndoff et al 1 William King heirs, 822,400 cu. ft. gas, Bayard sand 3,255 ft., gas 3,257 ft., T.D. 3,330 ft.

Washington County: South Franklin Township: Foley & Williams 1 H. H. Clark, 260,000 cu. ft. gas, Little Dunkard 859-903 ft., gas sand 1,100-83, gas 1,145 ft., T.D. 1,255 ft.

WEST VIRGINIA

In Hancock County, John T. Galey et al topped the Corniferous lime at 4,570 ft. in the Oriskany test on the Lenora Ramsey farm in Clay district. This places it at 3,501 ft. below sea level and some lower than the Talbot test. It is now drilling with a 6-in. hole and has reached 4,637 ft.

In Boone County, Pond Fork Oil & Gas Co. topped the Corniferous lime at 5,113 ft. in their deep test on fee in Peytona district.

In Grant district, Ritchie County, Benedum & Trees are drilling 1 L. J. Rinehart at 6,943 ft. or 1,109 ft. below the top of the Oriskany sand. In Union district, Pleasants County, these operators are running 7-in. casing to 5,240 ft. in the test on the W. W. Campbell farm. The Corniferous has not been reached. In Spring Creek district, Wirt County, the same operators are shut down at 2,995 ft. in the test on the Park Smith farm for a new line. In Tyler County no new hole was made in their test on the Pearl Broadwater farm in Meade district. The lost tools are still at 6,035 ft. In Roane County their test on the H. E. Crider farm in Reedy district, which was spudded in, may be moved to a new location.

WEST VIRGINIA COMPLETIONS

Braxton County, Otter district: Pittsburgh & West Virginia Gas Co. 5 G. B. Howell, 8 bbl., Salt sand, T.D. 1,500 ft.

Doddridge County, West Union district: Braden & Creighton 10 T. D. Swiger, 2 bbl., Big Injun sand 2,109-25 ft., T.D. 2,227½ ft.

Marshall County: Washington district: R. W. Parriott and A. G. Iseminger 1 Myrtle Moore, dry, through Injun sand, T.D. 1,690 ft.

Putnam County, Curry district: Pate Gas Co. 1 Mary Garrett, 44,730 cu. ft. gas, Big lime 1,670-1,830 ft., Injun sand 1,850-1,920 ft., Berea 2,357-83 ft., R.P. 370 lb., shot, T.D. 2,403 ft.

Gilmer County, Troy district: Mudlick Oil & Gas Co. 1 Cora Dent, dry through Big Injun sand, T.D. 2,736 ft.

Roane County, Walton district: South Penn Natural Gas Co. 13 M. A. Lynch, 10 bbl., Salt sand.

Upshur County, Banks district: Cumberland & Allegheny Gas Co. 327 F. S. Riffle, 386,000 cu. ft. gas, Squaw sand 1,728-43 ft., gas 1,733-43 ft., T.D. 1,843 ft.

Meade district: Hanley & Bird 1 Sella Matheny and C. D. Davis, 629,000 cu. ft. gas, Fifth sand 2,085-99 ft., gas 2,088-99 ft., T.D. 2,159 ft.

Wood County, Walker district: Clifton Oil & Gas Co. 3 Volcania Oil & Coal Co., dry, Big Injun sand 1,380 ft. with about 5,000 cu. ft. gas, filled back to 275 ft., dry, T.D. 1,502 ft.

ORISKANY GAS FIELDS

Jackson County, Ravenswood district: Columbian Carbon Co. 1 J. W. Morgan, 5,512,000 cu. ft. gas, Corniferous lime 4,839 ft., Oriskany 4,952 ft., shot 4,952-92 ft., T.D. 5,044 ft.

Ripley district: Spartan Gas Co. 1 W. E. Walker, 12,836,000 cu. ft. gas, Corniferous lime 5,043 ft., Oriskany 5,155 ft., gas 5,155-72 ft., T.D. 5,172 ft.

Columbian Carbon Co. 3 W. A. Carney, 3,341,000 cu. ft. gas, Big lime 1,965 ft., Berea 2,550 ft., Corniferous lime 5,082 ft., Oriskany 5,204 ft., T.D. 5,308 ft.

United Carbon Co. 1056 E. J. Williams, 3,187,000 cu. ft. gas, Salt sand 1,575-1,895 ft., Big lime 1,895-2,005 ft., Injun 2,005-25 ft., Berea 2,505-30 ft., Corniferous lime 5,043-5,144 ft., Oriskany 5,142 ft., shot 5,152-87 ft., R.P. 1,570 lb. in 24 hr., T.D. 5,187 ft.

West Virginia Gas Corp. 1 J. I. Cunningham, 3,087,000 cu. ft. gas, Salt sand 1,585-1,990 ft., Big lime 1,990-2,060 ft., Injun 2,060-2,110 ft., Berea 2,520-40 ft., Corniferous lime 5,052-5,159 ft., Oriskany 5,159 ft., gas 5,159-70 ft., gas 5,190-99 ft., T.D. 5,199 ft.

OKLAHOMA FIELD REPORT

Seminole County Test Extends Cromwell Pool to West

By CARL HOOT

OKLAHOMA operations have apparently hit a new low, with nine wells completed the last week. Although drilling here has shown a steady decline throughout 1942, the number of wells reported over any one week is not a true indication of the trend. First reports are holding up fairly well, there being 19 permits for new wells during the week.

Wildcat Activity

The Cromwell area of Seminole County was again in the limelight as Hall 1 Lindsay, NW SW NW 11-10-7, flowed 66 bbl. of 40-gravity oil in 12 hours from sand at 3,602-22 ft. It is 4 miles west of the Cromwell pool.

In southern Oklahoma a Marshall County wildcat, previously given up as a dry hole, was being reworked and showing for a producer. H. F. Potts 1 Godfrey, NE NE SW 13-6s-6, plugged back from 3,690 ft. to 3,273 ft., was shot, cleaned out and swabbed 75 bbl. of oil. Operators were waiting on pumping equipment before making further tests. Previously, the well had made up to 5 bbl. of oil an hour.

The Cumberland field of Bryan and Marshall counties continues to be one of the state's most prolific pools. Latest report on the field shows nine wells actively drilling, one of which is nearing completion. Pure Oil Co. 2-204 Little, SE NE SW 28-5s-7, had total depth of 5,832 ft. and was flowing at the rate of 1,000 bbl. a day.

In Pottawatomie County a second well was added to the Macomb pool, offsetting the discovery to the east. Atlantic Refining Co. 1 Blyth, NW SE 27-8-3, pumped 160 bbl. a day from Hunton at 4,596 ft.

OKLAHOMA COMPLETIONS

Wildcats

Comanche County: Sinclair Prairie 1 Austin, NW SW SW 6-2-9w, dry, T.D. 4,766 ft.

Pawnee County: Perry 1 Oakleaf, NE SE SW 19-22-6, dry, T.D. 3,443 ft., Wilcox 3,374-79 ft.

Payne County: Berry 1 Hoyt, SE NW NW 9-19-3, dry, T.D. 4,482 ft., Viola 4,383 ft., dolomite 4,430 ft., Wilcox 4,448 ft., second Wilcox 4,463 ft.

Seminole County: Hall 1 Lindsay, NW SW NW 11-10-7, flowed 66 bbl. in 12 hr., Cromwell 3,602-22 ft.

Hall-Briscoe 1 Seran, SW SE NE 22-11-8, dry, T.D. 4,108 ft., Bartlesville 2,915 ft., Cromwell 3,518 ft., Hunton 4,066 ft.

Fields

Brooksville, Pottawatomie County: Cities Service 1-B Fort Cobb, SE NE 4-8-3, swabbed 285 bbl. in 22 hr., Hunton 4,820 ft., T.D. 4,885 ft.

Hotulke, Pottawatomie County: Olsen 1 Billington, SW SE 13-9-4, pumped 10 bbl., Hunton 4,161-70 ft.

Macomb, Pottawatomie County: Atlantic 1 Blyth, NW SE 27-8-3, pumped 160 bbl., Hunton 4,596 ft., T.D. 4,956 ft., P.B. 4,819 ft.

Okemah, N., Okfuskee County: Keener 1-B Parsons, SW NE NE 36-12-9, pumped 43 bbl., Gilcrease 3,092-3,135 ft., T.D. 3,153 ft.

Recompletions

Apache, Caddo County: Texas 4 Smith, NE NW NW 2-5-12w, flowed 165 bbl., T.D. 3,883 ft., old T.D. 3,763 ft.

Glenn Pool, Creek County: Gulf 10 Berryhill, SW SW NE 17-17-12, 1 bbl., sand 1,519-70 ft., old T.D. 1,492 ft.

Gulf 13 Berryhill, SW SE NE 17-17-12, 1½ bbl., sand 1,433-1,514 ft., old T.D. 1,536 ft.

Gulf 28 Berryhill, N½ SW NE 17-17-12, 7 bbl., sand 1,435-1,595 ft., old T.D. 1,517 ft.

Hobart, Kiowa County: Phillips 2 Warren, NW NE SE 19-7-17w, pumped 220 bbl., pay 1,188-1,211 ft., old T.D. 1,186 ft.

Tonkawa, Kay County: J. K. Cleary 1-A Koffenbrick, NE NE SW 36-25-1w, dry, T.D. 2,547 ft., P.B. 2,510 ft.

West Central Texas

(Continued from Page 59)

Fain-McGaha 1 Dunagin-Varner, Section 89, is drilling below 1,300 ft.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Brown County: G. Greynolds et al 1 Paul Green, 26, B.B.B.&C. Sur., pumped 22 bbl. oil plus 18 per cent water, sand 1,003 ft., T.D. 1,019 ft.

Coleman County: States Oil Corp. 1 Mrs. M. E. McClure, T. B. Frizell Sur. 711, dry, T.D. 3,015 ft.

Eastland County: T. S. Stanfield 1 B. F. Fonville, E. Brown Sur. A-566, dry, T.D. 2,038 ft.

Parker County: Tex-Harvey Oil Co. 1 J. B. Gilbert, G.W.T.&P. Sur. A-1958, old well reinstated to be deepened, unable to deepen, junked, old T.D. 4,832 ft. (formerly J. L. Higginbotham's well).

Shackelford County: R. H. Roark et al 1 W. H. Green, Sec. 1, B.O.A. Sur., dry, T.D. 4,356 ft.

Fields

Akard, Jones County: Merry Bros. & Perini 1 J. A. Collins, Sec. 14, G. Martinez Sur. 137, flowed 93 bbl. oil in 4 hr. through ¾-in. choke on tubing, natural, est. 350 bbl., sand 2,120 ft., T.D. 2,128 ft.

Jim Ned, Coleman County: Anderson-Prichard 2 Bettie J. Mathews, Lot 5, Hiram Kegans Sur. 520, dry, T.D. 3,908 ft.

Northeast Novice, Coleman County: Anderson-Prichard 1 O. B. Featherstone, Sec. 52, Blk. 2, G.H.&H. Sur., flowed 444 bbl. through ⅝-in. choke on tubing, natural, sand 3,017-34 ft., T.D. 3,035 ft.

Anderson-Prichard 3 John W. Harris, Sec. 51, Blk. 2, G.H.&H. Sur., flowed 125 bbl. through 4/64-in. choke on tubing after shot, pay sand 3,081-3,102 ft., T.D. 3,104 ft.

Wimberly, Jones County: Butler & Horne and Rice 1 W. C. Church, Lot 88, Godwin subd. of De Witt C.S.L. Sur. 126, flowed 250 bbl. in 5 hr. through ¾-in. choke on tubing, natural, est. 700 bbl., lime 2,357 ft., T.D. 2,363 ft.

Fain-McGaha and Panhandle 1 W. C. Church, Lot 89, Godwin subd. of De Witt C.S.L. Sur. 126, flowed 162 bbl. in 3 hr. through ¾-in. choke on tubing, natural, est. 800 bbl., lime 2,290 ft., T.D. 2,310 ft.

Fain-McGaha 2 D. Tarpley, Lot 104, Godwin subd. of De Witt C.S.L. Sur. 126, dry, T.D. 2,612 ft.

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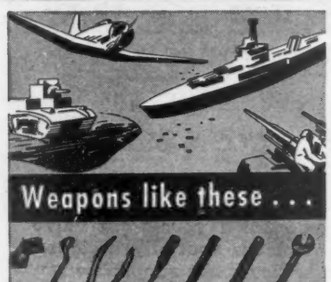

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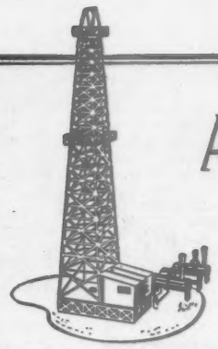

Among the Drilling

Drilling Contractors Hold Directors Meeting at Dallas

A meeting of the board of directors of the American Association of Oilwell Drilling Contractors was held in Dallas, Tex., August 21 to consider various problems now confronting drilling contractors. Present were: Warren S. Churchill, N. H. Wheless, Leslie Fain, John J. Moran, Ben M. McGraw, Will I. Lewis, E. B. Rubsamen, Jr., C. J. Davidson, George P. Livermore, George F. McGueen, Howard P. Holmes, Joseph Zeppa, F. M. Porter and Brad Mills. J. E. Brantly, president, was unable to attend, due to a last-minute plane cancellation.

Subjects discussed included transportation problems, ODT orders, labor relations, federal aid for contractors, draft deferment, compensation rate control methods, inventory of drilling equipment, priorities, wage-and-hour problems, percentage depletion and intangible drilling costs, tires for transporting drilling crews to and from location, annual fall meeting, need for drilling contractor representation on the OPC staff, price ceiling on drilling and the value of membership in the association.

Directors agreed that the drilling industry was faced with an acute transportation problem, due to a shortage of tires. Discussion centered around the thought that it might be possible to obtain tires for certain members of the drilling crews who would transport as many men as possible in one vehicle to and from the job, the toolpusher to determine the best allotment of such tires. This approach was ordered made in the form of an association resolution. Each state director of tire-rationing boards will be contacted by this resolution.

A discussion on wage-and-hour problems brought comment from several directors that drilling contractors should be careful to meet various provisions of the act when transporting men to and from the job, and also to make certain that unusual working conditions are covered by special contracts with employes.

The presiding officer appointed a committee composed of Howard P. Holmes and N. H. Wheless to write a letter to Lewis B. Hershey, director of selective service, expressing the association's appreciation of the action which recently recognized the oil industry, including the drilling of oil wells, as an industry essential to the support of the war effort.

One director stated that he had direct word from the Office of Petroleum Coordinator that a price ceiling would not be placed on drilling contract work, as recently rumored.

Directors were of the opinion that the Office of Petroleum Coordinator should place someone thoroughly familiar with the drilling industry on his staff, and that such a man should be selected from among drilling contractors. All other branches of the petroleum industry are now represented on the OPC staff.

The association secretary was ordered to investigate compensation rate control methods in the various states, to determine methods of adjusting rates, and to report his findings to the association members in bulletin form.

●

PENROD Drilling Co., Dallas, Tex., was starting a 6,000-ft. wildcat test in Bossier Parish, Louisiana, in the Carterville area, about 4½ miles west of Springhill and ½ mile from the Bossier-Webster line. The well is designated as Hunt Oil Co. 1 Bilbray, located 3,300 ft. east and 660 ft. north of the southwest corner of Section 5-23n-11w.

DAVIS Drilling Co., Wewoka, Okla., had about finished rigging up and was due to start drilling on Sunray Oil et al 1 Armstrong, SW SE NW 6-13n-1e, near Luther, in Oklahoma County, Oklahoma. Contract is for the second Wilcox sand or 6,100 ft.

HENRY FIELDS, contractor-operator of Borger, Tex., is associated with Count Dunaway, operator in Shawnee and the Greater Seminole area, in a 2,500-ft. test in New Mexico. The men have assembled 5,000 acres of leases around Section 16-14n-13e, in San Miguel County. Work is scheduled to start immediately.

BULLARD Drilling Co. had started its contract to drill Joe F. Belt 1 Barber, NW 1-6n-6e, a test to the Wilcox in La Salle Parish, Louisiana.

R. R. KIRCHNER, drilling contractor of Bristow, Okla., has rigged up for a cable-tool test to 3,750 ft. to be drilled for Herman Gussman, of Tulsa. The test is the 1 Lamons estate, SE NW SE 15-14-9e, Creek County, Oklahoma. The test is supported by Johnson Oil Co. and Champlin Refining Co., with Barnsdall Oil Co. taking close-in acreage.

RED IRON Drilling Co., who has contract for Pres Cochran et al 1 Anderson-Tully, NW SW 17-17-3e, Issaquena County, Mississippi which has drilled to 6,500 ft., was waiting for orders.

STOVALL Drilling Co. has contracts for two tests in Union Parish, Louisiana, both of which have been started. The tests are United Carbon C-9 and C-10 J. & H. Union Power, 21-21-3e, the Monroe gas field.

HOLLANDSWORTH Drilling Co., contractor for Stanolind Oil & Gas Co. 1 Wise, Warren Survey, Hunt County, Texas, an east offset to the Hollandsworth 2 Baker, is due to

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Contractors

start the test very soon. The rig is coming from the Thompson-Spurlock failure some 6 miles north.

DRILLING contract was expected to be signed this week for the Ace Gutowsky 1 Lem Wagner, NW NW SW 32-14n-4w, about 4 miles west of the Edmond field in northwestern Oklahoma County, Oklahoma. Contract is for 7,500 ft. or the second Wilcox.

C. O. HOLLOWAY, Tyler, Tex., contractor, had started moving in rig to drill a scheduled 4,500-ft. Wilcox sand test 4 miles west and north of Lovelady in South Houston County, Texas. The well will be carried as O. S. Strickland, trustee, 1 Thompson Brothers Mineral Co., with location in the southwest corner of a 203-acre lease in the John Cheairs Survey.

BREWSTER-BARTLE Drilling Co., Houston, Tex., has spudded in on a new operation in the North Bay City field, Matagorda County, Texas, following the completion of Ohio 1 McDonald, completed last week as an excellent producer in the Frio sand at 7,800 ft. In the meantime, drilling was scheduled to be started in the Springfield area, Anderson County, for the Navarro Oil Co. In Montgomery and Harris counties, two rotaries are running for George W. Strake.

CRON & GRACEY, Houston. Tex., received contract from Fohs Oil Co. for another test in the Lake Long field, La Fourche Parish, Louisiana, while in the West Lake Verret field, St. Martin Parish, one rig is running for Shell Oil Co., Inc.

FRANKLIN & TIDEMAN, Houston, Tex., are moving a rotary 3 miles south of the town of La Ward, Jackson County, Texas, where contract for a 7,000-ft. wildcat was received from George W. Strake for 1 L. Ranch.

FAIN Drilling Co., Houston, Tex., was scheduled to spud the company's 1 Pettus, a wildcat located on the Big Hill dome, Matagorda County, Texas. In the meantime, five other operations are reported in the Gulf Coast area. Drilling continues below 6,400 ft. in the company's 1 Baldwin, San Jacinto, County, Texas. Two rotaries are located in the Rincon field, Starr County, for Connental Oil Co., one in Matagorda for the same company and one in Victoria County for Union Producing Co.

J. A. GRAY, Houston, Tex., is rigging up for another wildcat in the Navidad area, Jackson County, Texas, for 1 Flourney in the Juan San Pierre Survey. The well is being drilled jointly with John Mayo.

ROWAN Drilling Co., Houston, Tex., has encountered heavy gas pressures in Amerada 1 Sullivan, a wildcat 1½ miles northeast of the town of Velasco, Brazoria County, Texas. The well attempted to blow out at a total depth of 7,183 ft.

MORRIS-HAMILTON Drilling Co., Houston, Tex., has reached a depth of 9,750 ft. in Wheelock & Collins 1 Planet, a wildcat located about 3 miles northeast of Francitas, Jackson County, Texas. This is one of the deepest tests drilled in the county.

CONTRACT was scheduled to be let in the near future on B. A. Ferrell 1 Fraser, a wildcat located in the W. N. Mack Survey, 4 miles south of the town of Huntville, Walker County, Texas.

Crew of Helmerich & Payne, Inc., in the East Tecumseh, Oklahoma, field. R. W. H. Bates, pipe racker; E. V. Wright, derrick man; E. L. Lockett, driller; Frank Darby, motorman, and Ell Casey, backup man

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Personal Paragraphs

LEW WENTZ, independent operator of Oklahoma, Ponca City, is one of three men who have been nominated for places in Oklahoma's Hall of Fame. The men will be inducted into the Hall of Fame at Oklahoma City on November 16, at the annual banquet. They were nominated in recognition of "services in their fields of endeavor which are outstanding and known to the citizenry of the state."

GEORGE W. WAITE, geologist, Wichita, Kans., has joined the Marine Corps, and is now taking a refresher course.

JIM SIMPSON, of Simpson-Ewers Oil Co., has completed a short course at a naval school in Rhode Island, and has been assigned as a lieutenant to a post in Florida.

TIM MAFFITT, safety director, Houston Oil Co., Houston, Tex., has left his position to join the Ferrying Command, in which he has a commission as a first lieutenant.

JAMES E. DUNN, former oil man from Midland, Tex., and lately a petty officer of the Navy in San Francisco, Calif., has been sent to officers' training school at University of Colorado at Boulder.

ROGER GEORGE, independent operator of Wichita, Kans., has been awarded a commission as a second lieutenant and is in the Army Air Force technical school at Miami Beach, Fla.

C. P. WATSON, Seaboard Oil Corp., chairman of the Southern California section, A.I.M.E., is busy lining up speakers and papers for the section's fall meeting to be held in Los Angeles, Calif., in October.

JOHN REID has been appointed manager of Morck Oil Co., Oil City, Pa., replacing LT. WILLIAM A. MORCK, who has entered the armed forces. Mr. Reid will assume his new duties immediately.

EARL F. KELSO, engineer for Phillips Petroleum Co., Bartlesville, Okla., prior to entering the service, and now a first lieutenant, has arrived in England, according to a cable received at Bartlesville last week. Lieutenant Kelso was ordered to active duty June 27 and reported to Camp Edwards, Massachusetts.

W. W. ROBINSON, Texas Co.; WILLIAM MOELLER, Southern California Gas Co.; H. L. EGGLESTON, Gilmore Oil Co.; P. S. MAGRUDER, General Petroleum Corp.; and R. D. GIBBS, Union Oil Co., have been named members of a committee of the California Natural Gasoline Association to coordinate the aid which the natural-gasoline industry can give the war effort.

HOMER C. MOORE, formerly associated with the Texas Co. geophysical department at Houston, Tex., has been named head of the geological department of Mid-Continent Petroleum Corp., Tulsa. Mr. Moore is a graduate of University of California in engineering and geology, and was recently in charge of Texas Co.'s geophysical operations in the Mid-Continent area.

W. DOW HAMM, assistant exploration manager in the Gulf Coast division for Shell Oil Co., Inc., Houston, Tex., resigned July 31 to become chief geologist for Atlantic Refining Co., at Dallas, Tex. Mr. Hamm, who has been with the Shell company for 20 years, was given a farewell dinner Friday night at the River Oaks Country Club by his business associates. GORDON H. WHITE replaces Mr. Hamm as assistant exploration manager.

JAMES V. BROWN, Bradford, Pa., is engaged in a special study on petroleum in the California and Rocky Mountain area for the Office of Price Administration, the Office of Petroleum Coordinator, and the U. S. Tariff Commission. He has been appointed special petroleum consultant and technical adviser to the last-named organization. He expects to return to Bradford late this month.

K. M. REGAN, vice president of Salt Dome Oil Corp., Houston, Tex., has been commissioned a captain in the Army Air Corp, and is reporting to Miami Beach, Fla., this week.

TERRELL V. MILLER, petroleum engineer for Humble Oil & Refining Co., Houston, Tex., has been appointed district petroleum engineer in the Avoca district.

HAROLD EDWARDS, geologist for Stanolind Oil & Gas Co., at Fort Worth, Tex., has been commissioned as ensign in the Navy. He will leave this week for the officer-training course at Annapolis.

CHARLES RYNICKER, of Gulf Oil Corp., edited the annual digest of papers presented before the Tulsa Geological Society, which has been published in book form by the society. Seventeen papers were abstracted by the authors.

HENRY SCHWEER, geologist-independent operator of Oklahoma City, Okla., has been commissioned a captain in the Army Air Corps technical division, and is to report for duty at Miami Beach, Fla., September 16.

JOHN ROTHSCHILD, who has been in charge of the company's transportation and crude-oil movement, has been appointed sales manager of Rothschild Oil Co., Santa Fe Springs, Calif., of which H. S. ROTHSCHILD is president.

GRAHAM SPRY, who has been identified with the London office of Standard Oil Co. of California for 5 years, has returned to London after an absence of 4 months. During his absence Mr. Spry acted as a personal assistant to Sir Stafford Cripps on his mission to India.

Do You Remember?

From The Oil and Gas Journal Files

35 YEARS AGO

Texas Co. is pumping oil through its 8-in. trunk line to Sherman, Tex., and in a few days will be pumping through to West Dallas. Sherman is about 209 miles south of Tulsa.

Glenn Pool extensions to the west, northwest, and north are being recorded constantly. Important test wells are drilling on all sides.

The last joint of pipe on the Gulf Pipe Line Co. 8-in. trunk line from Glenpool, I. T., to Sour Lake, Tex., a distance of 415 miles, was screwed into place at a point north of Red River on August 13, marking the completion of the first pipe line from Indian Territory oil fields to the Gulf Coast.

25 YEARS AGO

Houston's oil-refining industry promises big developments. Magnolia, Texas, Sinclair, Pierce Fordyce, and Gulf are reported to be planning the construction of refineries in that vicinity.

The predicted advance in gasoline at retail has come and motorists are now paying 25 cents the gallon, the highest price since the advent of the motor. At this price the use of a car will cost 2 cents per mile for gasoline.

It is said that the deepest known gas sand has been found at a depth below 4,100 ft. near Mineral Wells, Tex., by Empire Gas & Fuel Co. The well makes 20,000,000 cu. ft. of gas that is very rich in gasoline.

15 YEARS AGO

Five engineers have begun a survey for construction of a gas line from Amarillo, Tex., to Kansas City, Mo., for Citizens Industrial Gas Co. From 40 to 60 days will be required for the survey, and construction is scheduled to start immediately after completion of the survey.

The Greater Seminole area has been thrown for 4 successive days and the combined output of the four pools subjected to the order of proration has been below the prescribed figure of 450,000 bbl.

The California oil market is showing signs of weakness. While prices remain unchanged, the market is losing some of the stability recently enjoyed.

JOE WISSMAN, engineer, Gas Service Co., Parsons, Kans., has left for New London, Conn., to join the Coast Guard Service.

HARRY GRANT, of the production department of Sinclair Prairie Oil Co., has been transferred from Nowata to Pawhuska, Okla.

EDWARD G. SEUBERT, president, Standard Oil Co. of Indiana passed a corporate milestone recently when he started his fifty-first year with the firm he joined in 1891.

GERALD McMAHON, who left service with Continental Oil Co. last October, and who entered the chemical warfare division of the Army, is now a captain and is stationed overseas.

REESE H. TAYLOR, president of Union Oil Co., Los Angeles, Calif., who has been head of the WPB iron and steel branch, is reported to have submitted his resignation to Chairman Donald M. Nelson.

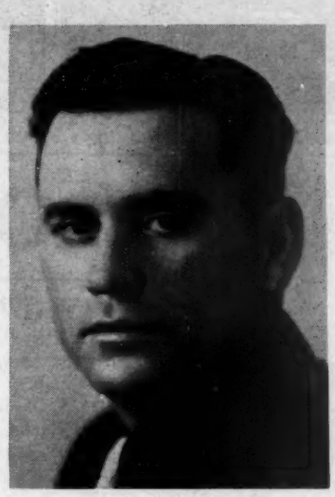
E. O. BENNETT, chief petroleum engineer of Continental Oil Co., Ponca City, Okla., was the guest speaker before the regular meeting of the Petroleum Engineering Club at Texas A. & M. College on August 20. His subject was "Pressure Maintenance and Multiple-Well Completion."

FRANK DAVENPORT, a refinery-shift fire marshall, was awarded the National Safety Council's "President's" Medal by H. M. NICHOLS, manager of the Point Breeze refinery of Atlantic Refining Co., for saving a life. Mr. Davenport administered artificial respiration to a woman who had been overcome by gas.

JAMES E. MOSS, formerly manager of operations of the marine department of Atlantic Refining Co., Philadelphia, Pa., has been appointed a full-time consultant with the American Petroleum Institute. He will serve as the industry's representative to answer and advise on questions of fact, technical problems and requests for information related to tank ships and barges from governmental agencies. His principal work will be with the Coast Guard.

Born Into Industry

Carlton D. Speed, Jr., recently appointed technologist in the Office of Petroleum Coordinator, at Washington, D. C., was born into the oil industry in 1903 as the son of C. D. Speed, Sr., who has produced oil at Corsicana, Tex., since 1898. He grew up around oil wells, one being located in the yard of his home. At the age of 10 he began working around wells, and at 17 during the summer months he started to work in the oil fields as pipe liner, roustabout, gager, roughneck, and other capacities, earning money for his college education.



CARLTON D. SPEED, JR.

After graduating from high school in Corsicana, Mr. Speed entered Texas A. & M. College where he received his bachelor of science degree with a high average despite his lettering in football, basketball, track, and participating in other school activities. In 1926 he went to work for Atlantic Refining Co. doing seismograph and torsion-balance work along the Mexia-Corsicana fault zone. After completing this work, he resigned and the next 2 years were spent at University of Chicago doing post graduate work in geology and paleontology.

Mr. Speed returned to Texas in 1929 and after a short period with the old Gypsy Oil Co. working in Oklahoma and Texas, he resigned and operated as an independent and drilled several wells in Texas. He later became associated with various independents, serving as geologist, and from 1935-36, he spent considerable time in Michigan and Canada doing consulting work.

At the time of his appointment as a member of the OPC staff, Mr. Speed was president of his own company, Speed Oil Co., which was organized in 1936 when he moved to Houston, Tex. Mr. Speed is president of the Houston Geological Society, a member of the American Association of Petroleum Geologists, and is also a member of the National Service Committee of the A.A.P.G. He married Miss Marvolene Bowe in 1932 and he and his wife reside at 3659 Meadow Lake Lane.

C. W. HEALY, Gulf Refining Co., is chairman of the Kentucky Interindustry Salvage Committee.

ROY B. BRECKINRIDGE, Michigan oil geologist, has been inducted into the Army and is stationed at Fort Logan, Colorado.

ROBERT J. GUTRU, a former geologist with Cities Service Oil Co., at Great Bend, Kans., is an ensign in the United States Naval Reserve, at Chicago, Ill.

ROBERT L. ZIEGLER, who has been identified with the petroleum industry for several years, has resigned his position as technical export adviser to Office of Price Administration, effective September 15.

F. M. ROSENKRANS, of Gas Service Co., Kansas City, Mo., addressed the downtown Kiwanis Club in Kansas City on September 3. His discussion centered on what part the gas-utility companies are playing in the war effort.

JOSEPH L. McHUGH, commissioner of conservation for Louisiana, has tendered his resignation to Gov. Sam Jones, and is running for congressman from the state's seventh congressional district.

J. HOWARD MYERS, Atlantic Refing Co. safety engineer, and vice chairman of the petroleum section, National Safety Council, has received a commission as lieutenant commander in the Navy. He is assigned to Philadelphia Navy Yard.

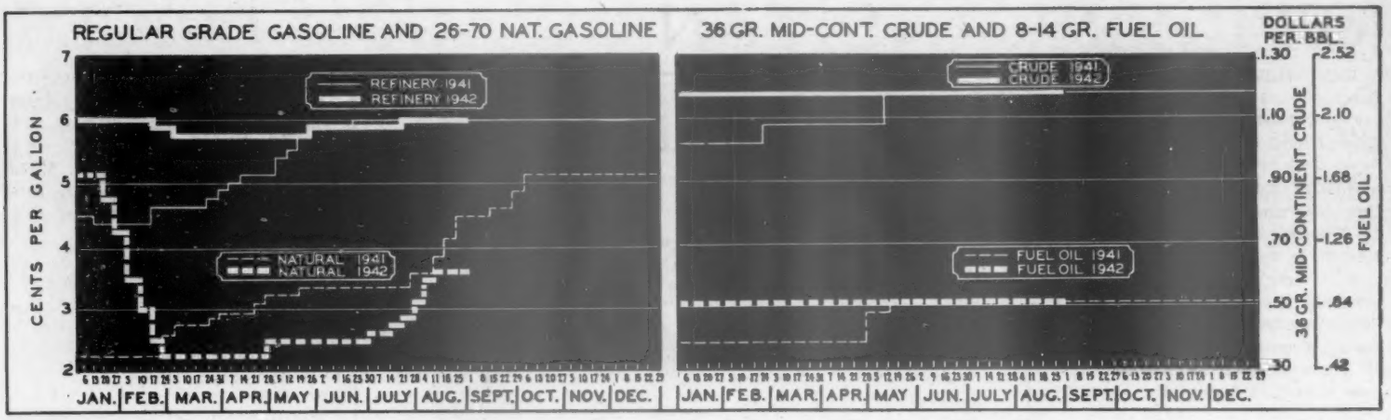
HAROLD L. GAIDRY, gas engineer of New Orleans Public Service Inc., New Orleans, La., has been renominated as chairman of the technical section, American Gas Association, for the coming year. JOHN H. WOLFE, general superintendent of gas operations, Consolidated Gas, Electric Light & Power Co. of Baltimore, Md., and present vice chairman of the section, was slated to succeed Mr. Gaidry but was unable to accept the nomination due to pressure of war work. CHARLES F. TURNER, chief chemist of East Ohio Gas Co., Cleveland, has been nominated for vice chairman of the technical section.

ED RUMSEY, geologist for Shell Oil Co., Inc., in the Amarillo, Tex., district, has lost the last four assistants assigned him to the armed forces. BROOKS PIERCE, the first to go, is now a lieutenant of the aviation intelligence. Next was SHERMAN WENGERD, now lieutenant junior grade, Navy aviation navigator. Following him came JACK GISBOURN, now an ensign in the Boston Navy Yard. JIM TICHY, present encumbent, has his commission as an ensign.

Shifts: A. G. EBERTS, engineer, Texas Co., Camden, Ark., to Mount Pleasant, Tex.; J. F. GREEN, engineer, Warren Petroleum Corp., Fairbanks to Houston, Tex.; L. M. SHORT, superintendent, Henshaw Brothers, Mission to Atascosa, Tex.; J. D. TOMPKINS, engineer, Acme Oil & Royalty Co., Midland to Dallas, Tex.; M. STEVENSON, superintendent, Cosco Oil Co., Catlettsburg to Ashland, Ky.; W. M. MILLER, JR., superintendent, Idaho Refining Co., Marshall, Mo., to Oklahoma City, Okla.; H. D. CHRISLIP, engineer, Gulf Oil Corp., Tulsa, Okla., to El Dorado, Ark.; DAN P. LONG, superintendent, Shamrock Oil & Gas Corp., Athens to Amarillo, Tex.; R. V. EWING, geologist, Continental Oil Co., Huntsville to Morton, Tex.; C. E. BLOUNT, superintendent, Uscan Drilling Co., Levelland to Kermit, Tex.; B. G. HUBNER, engineer, National Geophysical Co., Texarkana, Ark., to Jacksboro, Tex.; IVAN J. FENN, superintendent, Subterrex Co., Cairo, Ill., to Houston, Tex.; WAYNE A. WILSON, engineer, Phillips Petroleum Co., Bartlesville to Claremore, Okla.

RAY EBLING, of the Bartlesville, Okla., office of Phillips Phillips Petroleum Co., is now in Amarillo, Tex., engaged in some special work on taxes. Mr. Ebling was one of the immortals on a famous Kansas University basketball team.

DR. FREDERICK W. SULLIVAN, JR., formerly director of research for Standard Oil Co. of Indiana, has been appointed technical director of the Institute of Gas Technology, Chicago. Dr. Sullivan joined Standard as assistant director of research in 1923 and left as director in 1938. Prior to his association with Standard he served as instructor of organic chemistry at University of Michigan. Leaving Standard, he joined Allied Chemical & Dye Corp. He is among the leading scientists in his field in the nation.



MARKET DEVELOPMENTS . . .

Mid-Continent

BUYERS from all sections of the country this week continued their active interest in obtaining supplies of gasoline, light burning oils and residual fuel from Mid-Continent refiners.

Motor-fuel stocks are only slightly higher in the Oklahoma, Kansas and Missouri refining district than at this time a year ago. Demand from the Middle West refining centers has increased substantially owing to the drain on interior supplies by eastern jobbers and major marketers.

There has been no abrupt reaction from Directive 57 issued 2 weeks ago, prohibiting shipments of automotive fuel by tank cars within 20 interior states comprising OPC Districts 2 and 3. Refiners have continued shipments by rail to points which could not be immediately served by tank trucks. Several large operators of tank-truck fleets are awaiting action on request for amended permits, permitting operations in some of the territories previously served by rail. Marketers are also continuing work of equipping all terminals to receive deliveries in the future by tank trucks.

Calls continued brisk for kerosene and other grades of light burning oil. Inquiries are originating from East Coast and inland customers with particular enthusiasm from the Atlantic seaboard. Mid-Continent refiners are unable to assume any substantial increase in their commitments on light fuel oil despite the program of raising the yield of this class of products to 30 per cent of the crude charged.

Natural gasoline continues in strong demand both from inland and Gulf Coast refiners.

East Coast

NEW YORK.—Rationing of heating oil in District 1 under OPA plans which were given further study by oil-industry representatives in Washington last week is expected to get under way by September 15. Current indications are that not even minimum essential demands for heating oil can be met by foreseeable means of transportation. Attempts to induce domestic consumers to convert their units from oil to coal have met with an almost complete lack of success. Consequently, no alternative to rationing is in prospect.

It is believed that the already comparatively strong position of heavy fuel oil coupled with a prospective increase in rail transportation will assure consumers of this material sufficient supplies to meet minimum requirements throughout the winter. Evidence that sufficient supplies of residual fuel oil will be available was seen in the guarantee given the New York Board of Education by an independent oil company that it would supply the schools' needs to June 30, 1943. The contract was for 4,600,000 gal. at 4.8 cents per gallon.

Continued declines in gasoline stocks on the eastern seaboard indicate that despite the introduction of the more efficient permanent rationing system, consumption is still running in excess of the amount which the industry's economics committe believes is desirable in order to assure sufficient heating-oil supplies this winter. Whether this will result in reduced ration-card values is not known but it is generally felt that any action along this line will be delayed for at least some months yet. However, all supplemental rations are now being reviewed by ration boards and further limitations are in prospect.

SENTENCE SUMMARIES

MID-CONTINENT: Prices steady, demand strong, particularly for refinery motor fuel, natural gasoline, all grades of burning oils.

GULF COAST: Shipments continue at stimulated rate. Antisubmarine action, treasury absorption of abnormal freight rates open trade channels.

PACIFIC COAST: Continued draft on residual-fuel stocks prompts new action. Gasoline call steady but featureless.

EAST COAST: Traders anticipate light fuel-oil shortage, make all possible provisions for cushioning inadequacy. Prices unchanged.

PENNSYLVANIA: Motor fuel now denied tank-car entry into eastern part of District 2 diverted to seaboard trade.

A.P.I. REFINERY REPORT

Week Ended August 22, 1942

(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks: Gasoline	Residual	Gas oil
Appalachian	167	2,854	511	596
Ind., Ill., Ky.	757	14,584	3,723	5,423
Okla., Kans., Mo.	372	6,981	1,305	1,716
Censored group*	1,685	38,405	18,284	20,125
Rockies	88	2,016	545	425
California	654	15,603	53,639	12,131
Total Aug. 22, 1942	3,723	80,443	78,007	40,416
Total Aug. 15, 1942	3,711	80,708	77,422	40,041
Total Aug. 23, 1941	4,041	81,194	92,996	46,081

Note: Refinery runs and stocks for week ended August 29, 1942, appear on Trends page.

*Reports combined on East Coast, Gulf Coast, Louisiana-Arkansas and Inland Texas at request of OPC.

CRUDE-OIL STOCKS

(Bureau of Mines estimate)

Week ended:	Bbl. of crude*
August 22, 1942	246,307,000
August 15, 1942	246,433,000
August 23, 1941	248,910,000

*Excludes heavy, unrefinable stocks in California.

Gulf Coast

HOUSTON, Tex.—The recent OPC Directive 57 which prohibits tank-car movement of automotive fuel to 20 Middle West states was responsible for an unsettled condition in the Gulf Coast refinery market this week. Most market observers are anticipating wide readjustments in movement and predict a decrease in shipments from the district. Sellers' movements to interior points amounted to four or five trips monthly will now be limited to not more than two trips by the longer haul to the East Coast, consequently the reduction in movement will result from the lack of trips.

Kerosene, gas oils and fuels were in good demand but movement is still limited due to the lack of transportation facilities. The general price structure was unchanged. Sellers with tank cars have little trouble in obtaining ceiling prices.

Pacific Coast

LOS ANGELES, Calif.—Demand is continuing at peak rates and at maximum pegged prices. The District 5 production committee found it necessary to step up crude oil allowable 23,800 bbl. per day in August to provide additional supply from which to increase yields of fuel oil. Stocks have been consistently reduced for the past 2 years.

Gas oil and diesel are actively sought with the result that practically none are available in the spot market. Gas oil is being used for blending with residual. Addition of gas oil is necessary to meet requirements of Navy fuel-oil specifications.

Summer demand, although 14.3 per cent below last year, is enabling refiners to reduce gasoline stocks. July and August are peak months and much depends upon whether high schools and colleges delay opening in order to permit students to assist farmers in harvesting crops. If opening dates are delayed consumption will not drop off as fast as usual.

Natural-gasoline stocks are about in balance with demand. Refiners will soon increase stocks where possible for winter use but there is very little excess now available.

The recent pegging of asphalt and road-oil prices has prevented these commodities from continuing recent rises. Both have until recently been moving in small quantities at low prices.

Improvements are being made by several marketers in refinery equipment designed to produce better lubricating oils. All major refiners will shortly increase facilities to produce aviation lube oil.

REFINERY AND TANK-WAGON PRICES

(Prices as of September 1)

Refinery Gasoline

Octane (A.S.T.M.):	†80	78	74-76	72-74	68-70	63-66	60 & lower
Mid-Continent*	.....	.....	.....	5.875-6.000	.....	5.500-5.625	5.125-5.250
Pennsylvania	.....	.....	6.750-7.000	.....	.....	.....	.....
Gulf Coast‡	6.00-6.50	.....	.....	§5.750-6.250	§5.750-6.250	§5.250-5.750	§5.000-5.500
Northeast Coast	9.80	.....	.....	9.2	9.2	.....	.....
Pacific Coast	.....	6.750-7.000	6.500-6.750	6.375-6.500	6.000-6.375	5.500-5.750	5.000-5.125

*Basis Group 3. †1939 C.F.R. (research method). ‡Integrated companies restricted to lowest prices. §Unleaded.

Quotations are f.o.b. plant in cents and in cents per gallon except where otherwise noted. They are exclusive of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils, and do not include marine lighterage charges.

Natural Gasoline

Grades:	26-70	18-55	75-85(350-375)
Oklahoma (Group 3)	3.625	4.350	.....
North Texas	3.250	3.900	.....
North Louisiana	3.375	4.050	.....
California	.....	.....	5.000-5.500

Kerosene and No. 1 Fuel Oil

Gravity:	46	45	42-44	41-43	38-40
Mid-Continent*	.....	.....	4.625-4.750	4.500-4.625	.....
North Louisiana	.....	.....	.....	4.500-4.750	.....
Pennsylvania	6.250-6.625	6.125-6.250	.....	.....	.....
California	.....	.....	.....	4.500-5.500	4.250
Northeast Coast	.....	.....	.....	6.80	.....
Gulf Coast	.....	.....	.....	3.875	.....

*Basis Oklahoma Group 3.

Tractor, Diesel, and Bunker Fuel Oil

Specifications:	46-48° G.	24 D.I.	48-52 D.I.	58 & above	Diesel bunkers	Bunker C
Mid-Continent*	4.125	.....	.....	.....	.....	.....
California	.....	2.750-4.000	.....	.....	‡$1.35-1.45	$0.85-0.90
Gulf Coast	.....	.....	4.000	4.125	1.45	0.85
Northeast Coast	.....	.....	.....	6.800	2.780	1.65
North Louisiana	.....	.....	.....	.....	.....	†0.80-0.85

*Basis Oklahoma Group 3. †10-14° gravity. ‡Pacific Specification 200.

Furnace Oil, Gas Oil, Fuel Oil

	No. 2	No. 3	No. 5	No. 6
Mid-Continent*	3.625-3.750	3.500-3.625	$0.85	$0.85
Pennsylvania (West)	5.875-6.125	5.875-6.000	†5.250-5.500	.....
Northeast Coast	6.7	6.7	1.95	1.65
Pacific Coast	5.5	5.5	‡0.80-95	‡0.80
Gulf Coast	3.875-4.0	.....	1.65	0.85

*Basis Oklahoma Group 3. †36-40 gravity fuel oil. ‡Pacific Specification 300. §Pacific Specification 400.

Lubricating Oils

Bright and Steam Refined

OKLAHOMA (Group 3)—		
200-210 D, 10-25		27.00
150-160 D, 0-10		23.00
120-125 D, 0-10		22.00
Steam refined:		
600 dark green (untreated)	9.00	9.50
PENNSYLVANIA—		
Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		30.50
15 pour point		29.50
25 pour point	25.00	28.00
Steam refined:		
600	15.00	16.00
650	15.50	16.50
600 flash	16.00	17.50
630 flash	17.00	17.50

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—	
0-10 pour point:	
200-3	15.00
300-3	18.00
500-3	19.50
600-3	20.00

Note: Viscous neutrals, 10-25 pour, quoted 0.5 cent under 0-10 oils.

Neutral Oil

CALIFORNIA		
Pale oils:		
200-2½-3	7.00	7.75
400-3-4	7.25	8.00
600-3-4	8.75	11.00
Red oils:		
200-4-5	7.00	7.75
400-5-6	9.00	11.00
500-900, 5-6½	9.25	11.25
GULF COAST—		
Pale oils:		
200-3	8.50	8.75
300-3	9.00	9.25
500-3½	9.75	10.00
750-3½	10.00	10.25
2,000-4	10.50	10.75
3,000-4	12.25	12.50
PENNSYLVANIA—		
150 vis. at 70° F., 3 color, 400-405 flash:		37.50
Zero pour point		36.50
10 pour point		35.50
15 pour point		30.00
25 pour point		
200 vis., at 70° F., 3 color:		39.50
Zero pour point		38.50
10 pour point		37.50
15 pour point		32.00
25 pour point		

Wax

(Cents per pound)

OKLAHOMA (Group 3)—	
124-126 (A.m.p.) w.c. scale	4.250
PENNSYLVANIA (inland refineries)—	
122-124 (A.m.p.) w.c. scale	4.250
124-126 (A.m.p.) w.c. scale	4.250
NEW YORK—	
Wax in bags fully refined:	
130-132 (A.m.p.) wax	5.850
133-135 (A.m.p.) wax	6.150
Crude scale:	
124-126 (A.m.p.) w.s.	4.250
124-126 (A.m.p.) y.s.	4.250

EXPORT PRICES

Gasoline—60-62° Gravity, Maximum 400 End Point

Octane:	72-74	68-70	65-66	60
Gulf Coast	6.500	6.250-6.500	5.875	5.625
Pacific Coast	.....	6.125-6.500	5.875-6.000	5.500-5.625

Distillate and Fuel Oil

	Kerosene	Diesel fuel				Bunker
	41-43	24 G.	48-52 D.I.	58 D.I.	Bunkers	C grade
Gulf Coast	4.000-4.250	.....	4.125-4.375	4.375	$1.65-80	$0.85-95
Pacific Coast	4.750-5.000	1.25-30	.....	.....	†1.35-45	*0.80-90

*Pacific Specification 400. †Pacific Specification 200.

Lubricating Oils

	Neutral oils		Bright and cylinder stocks		
	200-3	150-3	200-3	150-3	600&630 S.R.
Mid-Continent	16.8	.....	28.8	24.8	.....
Pennsylvania	43-50	41-46	36-37	36-37	26.5-27

GASOLINE AND KEROSENE TANK-WAGON PRICES IN 50 CITIES

(Gasoline prices based on regular grades, tax included, undivided dealer)

ATLANTIC AND NEW ENGLAND

(Socony-Vacuum Oil Co., Inc., and Atlantic Refining Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Baltimore, Md.	15.45	5.50	10.20
Boston, Mass.	14.90	4.50	9.50
Burlington, Vt.	16.90	5.50	....
Buffalo, N. Y.	16.20	5.50	10.30
Dover, Del.	16.70	5.50	11.20
Hartford, Conn.	15.60	4.50	....
Manchester, N. H.	17.30	5.50	10.50
Newark, N. J.	14.70	4.50	9.40
New York, N. Y.	16.10	5.50	9.50
Philadelphia, Pa.	16.20	5.50	11.65
Pittsburgh, Pa.	16.70	5.50	12.00
Portland, Me.	16.30	5.50	9.60
Providence, R. I.	15.00	4.50	9.30
Washington, D. C.	14.70	3.50	10.70
Average 14 cities	15.91	5.07	10.32

(All prices undivided dealer basis.)

CENTRAL

(Standard Oil Co. of Indiana, Standard Oil Co. of Ohio, Continental Oil Co. and Texas Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Chicago, Ill.	13.40	4.50	10.30
Cleveland, Ohio	15.00	5.50	*9.00
Dallas, Tex.	13.00	5.50	7.00
Des Moines, Iowa	14.40	4.50	9.80
Detroit, Mich.	14.40	4.50	9.60
Fargo, N. D.	16.90	5.50	11.30
Huron, S. D.	16.30	5.50	10.70
Indianapolis, Ind.	15.20	5.50	9.80
Little Rock, Ark.	17.50	8.00	10.00
Milwaukee, Wis.	16.10	5.50	10.50
Minneapolis, Minn.	15.40	5.50	10.30
Omaha, Neb.	15.40	6.50	9.80
Tulsa, Okla.	16.50	7.00	8.50
Wichita, Kans.	12.70	4.50	8.00
Average 14 cities	15.15	5.57	9.61

*Includes 1-cent state tax.

SOUTHEASTERN

(Standard Oil Companies of New Jersey, Kentucky, and Louisiana)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Atlanta, Ga.	21.40	7.50	11.40
Birmingham, Ala.	18.50	8.50	9.00
Charleston, S. C.	18.45	7.50	....
Charleston, W. Va.	18.75	7.50	13.00
Charlotte, N. C.	19.60	7.50	11.00
Jacksonville, Fla.	21.40	8.50	10.40
Jackson, Miss.	17.50	7.50	8.50
Louisville, Ky.	16.50	6.50	8.50
Memphis, Tenn.	18.60	8.50	10.50
New Orleans, La.	16.75	8.50	*10.00
Norfolk, Va.	16.95	6.50	13.50
Average 11 cities	18.58	7.59	10.58

*Includes 1-cent state tax.

MIDWESTERN

(Continental Oil Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Albuquerque, N. M.	17.50	7.50	10.00
Boise, Idaho	20.10	6.50	16.50
Casper, Wyo.	17.00	5.50	12.00
Denver, Colo.	14.50	5.50	11.00
Helena, Mont.	17.00	6.50	13.00
Phoenix, Ariz.	18.50	6.50	12.50
Reno, Nev.	17.50	5.50	13.50
Salt Lake, Utah	18.50	6.50	14.50
Average 8 cities	17.58	6.25	12.88

PACIFIC COAST

(Standard Oil Co. of California)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Portland, Ore.	17.00	6.50	13.50
San Francisco, Calif.	14.50	4.50	11.50
Seattle, Wash.	17.00	6.50	13.50
Average 3 cities	16.17	5.83	12.83
Average 50 cities	16.57	5.96	10.76
Average last week	16.57	5.96	10.76

La.-Arkansas Fields

(Continued from Page 68)

made through perforated casing at 3,700-16 ft. The production test is disappointing in view of the fact that on a previous drill-stem test the well flowed better than 300 bbl. of oil daily.

NORTH LOUISIANA COMPLETIONS

Wildcat, Caddo Parish: C. A. Hilburn 1 Fly, N½ NE 21-19n-16w, dry, T.D. 3,047 ft.

Wildcat, Franklin Parish: Continental 1 Burnside, N½ N½ NW 70-13n-12e, dry, T.D. 4,448 ft.

Caddo, Caddo Parish: State Line 2 Helpman, N½ NW SW 16-21n-16w, 10 bbl., pay 980-95 ft.

Nebo, La Salle Parish: Lamar & Hunt 3 Hailey, SW NE NW 2-7n-3e, flowed 190 bbl., pay 4,005-4,203 ft.

H. L. Hunt 46-A Goodpine, NE SE 8-7n-3e, flowed 96 bbl., pay 3,412-20 ft., T.D. 4,298 ft.

H. L. Hunt F-114 Goodpine, NW NW 27-7n-3e, flowed 230 bbl., pay 4,061-66 ft., T.D. 4,692 ft.

Haynesville, Claiborne Parish: Magnolia 1-A Lowe, SW NE 9-23n-8w, flowed 227 bbl., Pettit 5,372-85 ft., T.D. 5,427 ft.

MISSISSIPPI

Macro Drilling Co. 1 Long Bell Lumber Co., a probable pool opener in Clark County, was shut down for orders following a 50-minute drill-stem test at 3,658-87 ft. which recovered 5 ft. of oil, 25 ft. of oil-cut mud and 90 ft. of heavy mud with a slight oil show.

MISSISSIPPI COMPLETIONS

Madison County, 2 mi. E of Sharpsburg: Amerada Pet. 1 Arenz, 25-11n-3e, dry, T.D. 6,999 ft.

Rankin County: Bering Oil 1 Crosby Lbr. Co., SW SW 10-3n-1e, dry, T.D. 7,504 ft.

Scott County: Carter Oil 1 Newell, N½ NW SW 32-5n-7e, dry, T.D. 7,313 ft.

CRUDE-OIL PRICES

Representative selected crude prices from all sections of the country appear below:

East Texas	$1.25
Conroe	1.43
Tepetate, Louisiana	1.18
Illinois basin	1.37
Pecos County, Texas	.95
Bradford, Pennsylvania	3.00
Van, Van Zandt County, Texas*	1.08

*No change since 5-21-41.

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast, Texas	West Texas*
18-18.9	$0.80	....	....	....
19-19.9	.84	....	$1.06	$0.70
20-20.9	.88	$0.85	1.08	.72
21-21.9	.92	.87	1.10	.74
22-22.9	.96	.89	1.12	.76
23-23.9	1.00	.91	1.14	.78
24-24.9	1.03	.93	1.16	.80
25-25.9	1.07	.95	1.18	.82
26-26.9	1.11	.97	1.20	.84
27-27.9	1.15	.99	1.22	.86
28-28.9	1.18	1.01	1.24	.88
29-29.9	1.20	1.03	1.26	.90
30-30.9	1.23	1.05	1.28	.92
31-31.9	....	1.07	1.30	.94
32-32.9	....	1.09	1.32	.96
33-33.9	....	1.11	1.34	.98
34-34.9	....	1.13	1.36	1.00
35-35.9	....	1.15	1.38	1.02
36-36.9	....	1.17	1.40	1.04
37-37.9	....	1.19	1.42	1.06
38-38.9	....	1.21	1.44	1.08
39-39.9	....	1.23	1.46	1.10
40 and above	....	1.25	1.48	1.12

*Includes Lea County, New Mexico.

Some pointers on diesel crankshaft alignment and repair

Information supplied by "Oil and Gas Journal"

Close attention to the alignment and repair of crankshafts of larger Diesel engines has lead to the development of various new practices.

Among them are the use of one or more hydraulic jacks, gages and special attachments, in addition to the usual pull-down clamp method employed to check crankshaft measurements.

Another is an unusual procedure employed in repairing a crankshaft which was broken at the web. Two U-shaped forgings were shrunk over the broken web and joined into a complete bond by welding. During the operation water was circulated through jackets welded to the sides of the crank web and around the adjacent main journal and crank pin to prevent distortion and allow the bands to shrink tightly around the web after cooling.

The cost of installing a new shaft in this instance would have been more than $10,000. Repair by the usual method would have cost $5,000 or more. The actual cost, complete, was approximately $3,200 without removing the shaft from the engine.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.
MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

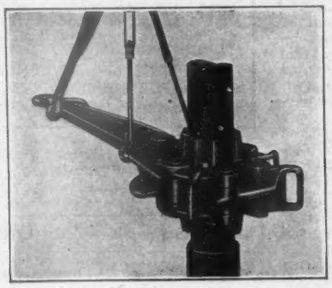
Climax Molybdenum Company
500 Fifth Avenue New York City

MOLY

EQUIPMENT PROGRESS...

BJ Offers Bushings for Drill Casing

The increasing use of casing for the drilling string, in place of the usual drill pipe, is responsible for the development of these BJ drill-casing bushings which



have proved completely successful for making up or breaking out "drill casing."

When casing is used for the drilling string a special type of tong is required, particularly to break out tight joints of the comparatively thin-walled casing. These drill casing bushings are furnished with a 12-in. bearing surface, and are bored to contact the entire circumference of the casing. Two of the four bushings are equipped with die slots into which are fitted three 4-in. knurled BJ long dies bored to the diameter of the casing upon which they are to be used.

In service these new drill-casing bushings break out the tightest joints without crimping or bottlenecking the casing, even after repeated round trips of the drill casing.

Another successful use of these bushings is for setting any type of thin-walled casing, or for removing corroded casing which has been in the well for a long period of time.

Detailed information as to sizes and prices is available from Byron Jackson Co., Houston, Los Angeles, or New York.

A 4,000-hp. Compressor In One Unit

Clark Brothers Co., Inc., Olean, N. Y., has developed a Clark "Angle" driven by steam, and built in units up to 4,000 hp. One of the new eight-cylinder steam-driven units equals in capacity a battery of 10 of the company's four-cylinder 400-hp. gas-driven angles.

TRADE LITERATURE

BARRETT DIVISION OF ALLIED CHEMICAL & DYE CORP., 40 Rector Street, New York. — A well-illustrated and comprehensive manual providing information for establishing good coating practices for the applications of Barrett coatings for natural-gas, oil and gasoline pipe lines.

B. F. GOODRICH CO., Akron, Ohio.—Handbook of Technical Information on Koroseal. Section 1, a 24-page volume now available upon request, treats the general subject; Section 2 will cover Koroseal insulating and jacketing materials for the wire and cable industry, while Section 3 will describe in detail laboratory tests evaluating thermoplastic and thermosetting materials. Plentifully illustrated, the first section of the handbook tells the nature and chemistry of Koroseal, physical properties, plasticizers, stabilizers and pigments used in compounds, together with mixing and processing procedures. Of especial value are six charts, a manufacturing flow diagram, specific viscosity vs. physical properties, effect of quantity of plasticizer, electrical effects of aging, differences in plasticizers and physical effects of various pigments, as well as two tables, one on physical constants and the other on plasticizer comparison.

Fibre Conduit Appoints Connell Vice President in Charge of Sales

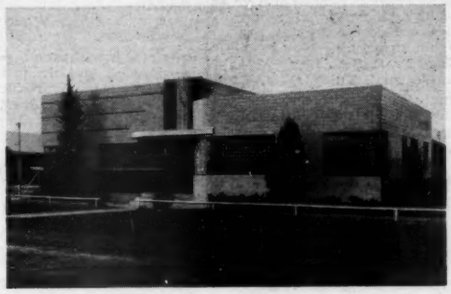
Appointment of James R. Connell as vice president in charge of sales of Fibre Conduit Co., Orangeburg, N. Y., was announced recently by H. J. Robertson, Jr., president.

Mr. Connell has been a member of the board of directors of the company since 1939, and will continue to serve in this post. He resigned as a partner in charge of the New York office of Kebbon McCormick & Co. to joint Fibre Conduit, with offices at 292 Madison Avenue.

Coming east from Omaha in 1929 as manager of the New York office of Continental Illinois National Bank & Trust Co. of Chicago, Mr. Connell has been active in the investment banking field, and last year was a governor of the Bond Club of New York.

Sonken-Galamba Moves Into New Quarters

Materials for the construction of new refinery units from reconditioned equipment—without dipping into supplies of America's most vital material, new steel —are provded for the industry by Sonken-Galamba



New office building and a portion of the newly enlarged shops of the Sonken-Galamba Supply Co.'s new location at Twenty-first and Union in Tulsa

Interior of one of the new Sonken-Galamba Supply Co. warehouses on its new site, showing some of the stocks of equipment carried by the company

Supply Co., which has recently moved into its new 10-acre plant site in Tulsa.

Robert W. Duden, vice president and general manager of the firm, said that the concern purchases used equipment from refineries, tank storage depots, and pipe lines from coast to coast. This material is all carefully reconditioned in the newly enlarged shops of the company, located at Twenty-first and Union Avenue.

Complete pipe shops and facilities for valve reconditioning and testing, as well as for pump repair, are maintained by the firm. Used units are purchased from refineries throughout the United States, such as from Standard Oil Co., Bayonne, N. J.; Pure Oil Co., Marcus Hook, Pa.; Atlantic Refining Co., Franklin, Pa., and Brunswick, Ga.; Barnsdall Refining Co., Okmulgee, Okla.; Signal Oil & Gas Co., Texon, Tex., and Plains Oil & Refining Co., Great Bend, Kans.

Reconditioned equipment is usually available for shipment on short notice, either from the Tulsa warehouse or the branch in Kansas City.

W. C. Berry, of Kansas City, is president of the concern.

Frazier Made District Sales Manager For Columbia Chemical Division

W. I. Galliher, director of sales, Columbia Chemical Division, Pittsburgh Plate Glass Co., has announced the appointment of K. C. Frazier as district sales manager of the New York metropolitan area. Mr. Frazier is a graduate of Colgate University and a member of the Delta Kappa Epsilon fraternity. For the last 10 years he has been southwestern manager of Southern Alkali Corp., an affiliate of Pittsburgh Plate Glass Co.

K. C. FRAZIER

Monsanto Promotes Two

Victor E. Williams, assistant general manager of sales of the organic chemicals division of Monsanto Chemical Co., with headquarters in New York, has been promoted to the position of director of sales, it was announced recently by Julius A. Berninghaus, general manager of the division. Mr. Williams will remain at his present location in New York.

Promotion of Frederick C. Renner, assistant general manager of sales of the organic chemicals division of Monsanto, to general manager of sales, with offices in St. Louis, Mo., also was announced by Mr. Berninghaus.

Stockton Joins Oil Center Tool Co.

F. M. Stockton has joined Oil Center Tool Co., Houston, Tex., effective June 1, as accountant and office manager. Mr. Stockton was formerly a supervising accountant in the Kansas City office of Arthur Anderson & Co., a national organization of public accountants.

Change Name of Subsidiary

Jas. P. Marsh Corp., Chicago, announce the change in name of their subsidiary, the E. A. Hill Co., Inc., to Dependable Manufacturing Co. (division of Jas. P. Marsh Corp.). General offices of Dependable Manufacturing Co. are located at 2073 Southport Avenue, with factory operations at 430 West Erie Street, Chicago.

CLASSIFIED ADVERTISING

THE MARKET PLACE OF THE OIL INDUSTRY

Patent Attorneys

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All cases submitted given personal attention.

Form "Evidence of Conception" with instructions for use and "Schedule of Government and Attorney's Fees—FREE.

LANCASTER, ALLWINE & ROMMEL
Patent Law Offices
418 Bowen Bldg., Washington, D. C.

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

LEASES ROYALTIES

PRODUCING OR NONPRODUCING
Texas, New Mexico, Oklahoma, Louisiana and Illinois
20 Years' Experience
Inquiries Invited

B. D. BUCKLEY
Paul Brown Bldg., St. Louis, Mo.

U. S. OIL lands can be filed for Gov. oil lease developing area. Want several join filing block. Small expense. Box B-187, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE: Oil and Gas leases on proven structures, drilling propositions, small production and fluorspar deposits. Reports furnished. W. P. Harley, Bowling Green, Ky.

I HAVE production on a large block of leases and I need capital to properly develop and market. Will make responsible party a very attractive proposition under certain circumstances. The Oil and Gas Journal, Box B-232, Tulsa, Okla.

STRIPPER property—Kansas—260 acres —cores 37' pay sand with recoverable oil over 6,000 bbls. per acre. Will lease for cash & over-ride. Will bear closest investigation. The Oil and Gas Journal, Box B-240, Tulsa, Okla.

FOR LEASE 160 Acres in Oil King Dist. Fresno Co. Near big development, registered dealers only. Wm. L. Crews, 200 Shaver St., San Rafael, Calif.

FOR SALE: Oil and gas leases North and South Dakota, reasonably priced. Owner, P. O. Box 1163, Tulsa, Oklahoma.

Financing

CAPITAL SEEKERS — Interested in raising $25,000 or more for a legitimate project should communicate with AMSTER LEONARD, Fox Theater Bldg., Detroit, Mich.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Old Press. 215 East Third St., Tulsa, Okla

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

WE BUY & SELL all types of Oil and Gas Royalties. Sales restricted to registered dealers only. Grimes Royalty Co. National Mutual Bldg., Tulsa, Okla.

FOR SALE—Landowner's Royalty under 120 acres leased to Humble Oil & Ref. Co. in Lea Co., N. M. North of the Big Hobbs Pool. 27 pools in County. HARRY S. WRIGHT, FARMINGTON, N. M.

Incorporation

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

Business Opportunities

WANT a drilling proposition. Large Indiana acreage. Good structure. Jesse Allen, 1819 Garfield Ave., Terre Haute, Ind.

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta Co., 115 S. Cinn., Tulsa, Oklahoma.

Ranches and Farm Lands

14,000 ACRES ranch, Oklahoma. Is handling 700 cattle. In estate, must sell or will lease for oil or sell lease and royalty. Adjoins block of Major Oil Co. Write for description. Guy Speakman, Liberal, Kans.

Situations Wanted

MAN with 15 years practical supervising experience in oil, gas, and cycling production. Will furnish details upon request. Box B-233, The Oil and Gas Journal, Tulsa, Okla.

WANTED—Position with permanent location, as Geologist—Seismologist. B. S. and grad. work in geology, 8 years' exp. in geology and seismology. Age 33, Class 3-A, now employed. Will furnish detail information upon request. Inquire Box B-194, The Oil and Gas Journal, Tulsa, Okla.

FINANCIAL backer in oil and gas lease and royalty trading business wanted. Connected with independent oil operator, now retired, for several years. Thorough knowledge of mid-continent and gulf coast areas. Eligible for bar (law) examination. Excellent references furnished interested parties. Box B-231, The Oil and Gas Journal, Tulsa, Okla.

CHEMIST, Refinery Engineer, licensed Chemical Engineer. Texas University Graduate. Thirteen Years experience includes Plant Engineer, Chief Chemist, and Process Engineer. Proven administrative and technical ability. Exceptional record in process studies and cost reduction gasoline and lube manufacture. Major Oil Company training. Draft 3-A. Box B-244, The Oil and Gas Journal, Tulsa, Okla.

MATERIAL man; young, draft exempt, 8 yrs. experience in traffic, drilling & producing equipment, supply store. Best references. Box B-252, The Oil and Gas Journal, Tulsa, Okla.

MECHANICAL Engineer, 20 years experience, oil refinery design, construction, maintenance, field and office. Competent to manage construction and maintenance department. Desires permanent connection with growing concern. Box B-254, The Oil and Gas Journal, Tulsa, Okla.

ELECTRICAL Engineer with responsible experience developing refinery and large industrial electric circuits and control, married, age 30, employed midwest refinery, $3600. Box B-253, The Oil and Gas Journal, Tulsa, Okla.

Help Wanted

NOTICE TO ADVERTISERS

Advertisers offering positions to workers skilled in critical war industries are requested by the War Manpower Commission to include the following sentence in their advertisement:

"Applications from those now employed in war industries will not be considered."

ENGINEER — Mechanical, Chemical or Petroleum Refining graduate wanted by Mid-West manufacturer of refinery and gasoline plant equipment. Prefer man with operating or design experience. Permanent position open in company handling only high priority business. Reply stating training, experience, salary and include recent photograph. All replies confidential. The Oil and Gas Journal, Box B-220, Tulsa, Okla.

OIL FIELD Engine Company has openings for a salesman and a serviceman that can do some selling. These are salaried permanent positions with an established concern. Must be able to leave town. Our men have been advised of this ald. Applications from those now employed in War Industry will not be considered. Give full particulars in letter to The Oil and Gas Journal, Box B-221, Tulsa, Okla.

ENGINEERS WANTED
Chemical or Mechanical with minimum one year oil refinery plant operation or maintenance experience. Require University Engineering School graduate with basic knowledge principles fluid flow. To work on process flow sheets, equipment selection and general handling oil refinery. Defense Contracts as assistant to senior engineers. No aliens or men engaged Defense work considered. Opportunity up to individual. In reply state experience, education, draft status, salary expected. Foster Wheeler Corporation, Room 2402, 165 Broadway, New York.

CHEMIST with some petroleum experience. Needed in Chicago area for development of petroleum products and rust preventives. State age, draft status, degree, and salary desired in opening letter. The Oil and Gas Journal, Box B-250, Tulsa, Okla.

Equipment Wanted

WANTED
Large Steel Storage Tanks and Structural Steel Buildings.
GREENSPON'S
National Stock Yards
(St. Clair County), Ill.

WANTED
2—35,000-55,000 bbl. storage tanks
2—1300' air compressors.
20—25 ton locomotive cranes.
R. C. STANHOPE, INC.
60 E. 42nd St., New York, N. Y.

Equipment Wanted

ATTENTION INVENTORS
Old established Pacific Coast Manufacturing Company is interested in acquiring patented or patentable items for manufacture on either outright purchase or royalty basis. Box B-251, The Oil and Gas Journal, Tulsa, Okla.

WILL PAY CASH
Storage tanks, abandoned pipe lines or wells, gasoline plants, refineries or any material accumulating from the oil fields regardless of location. WILL HANDLE UNLIMITED DEALS.
PLANT and EQUIPMENT PURCHASING CORP.
606 Fountain Sq. Bldg., Cincinnati, Ohio

WANTED—Steel tanks total 120,000 gallon capacity. Will take 5000 gallon or larger. Tidewater Equipment & Machinery Corp., 305 Madison Ave., New York, N. Y.

For Sale—Equipment

75,000 GALLON semi-spherical elevated steel tank, 80 feet to balcony, 4 foot riser pipe. Located at Hatch, New Mexico. B. F. Archer, Mayor, Hatch, New Mexico.

FOR SALE OR LEASE
1 Steam Powered Heavy Rotary Drilling Rig.
1 Steam Powered Light Rotary Drilling Rig.
1 Diesel Powered Rotary Drilling Rig, good for 5500 feet, using 4½" Drill Pipe.
LARGE LOT OF STEAM EQUIPMENT
2 Spudders with complete strings of Cable Tools, and Gas Engines.

Will sell above for cash or good notes, or will lease to responsible parties, preferably on continuous work.

Might exchange for interest in wildcat leases or production.

Also 3000 feet of used 3½" Drill Pipe, and 5000 Feet of used 4½" Drill Pipe; full hole tool joints; fair condition only for sale at bargain price for cash. Box B-243, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE: 60—4" 8V Thd. Fairbanks Sphero SE Valves, unrepaired. $10.00 each. Patridge, Cities Service Oil, Bartlesville.

3" x 4" F&M Power Pump in excellent condition. Also Centrifugal & Steam Pumps. Gilbert Pipe & Supply, Electra, Tex.

FOR SALE: Star Mfg. Company, portable cooling tower, telescoping type, 7' wide, 13' long, 8' high. All steel. Melton Machinery & Supply Co., Seminole, Okla

FOR SALE on the ground in southeastern Kansas the following: Eight tanks from 27 to 32 feet in length by 6 ft. 5 in. to 7 ft. 4 in. in diameter. Seven tanks 7 ft. 9 in. in length by 9 ft. 9 in. in diameter. One 1600 barrel tank. Three tanks 14 ft. 10 in. long by 6 ft. in diameter. We have smaller tanks of various sizes. Also two 100 H.P. steam boilers; one new 54 foot bubble tower 30 in. in diameter. Also other miscellaneous supplies including corrugated galvanized iron sheeting; pipes; couplings; and valves. Write or wire George E. Leonard, 2800 Mercier Street, Kansas City, Missouri, Phone Valentine 6334.

NEW OIL WELL DRILLING EQUIPMENT FOR SALE

Equipment purchased for shipment abroad sometime ago, now being offered either in part or in its entirety. Consists of large number Hughes Simplex Rock Bits, Reamers, Fish Tail Bits, Drilling Jars, Worthington Pumping Sets, Boring tubes, Drill Pipe Collars and miscellaneous replacement parts. Material located in New Jersey. Itemized lists furnished on request. Attractive prices.

MARINE METAL & SUPPLY CO.
167 South Street New York City

LINE PUMPS
Two—2½" 4 stage Byron Jackson multiplex with 150 h.p. motors and controls.
CORKEN PUMP & MACHINERY CO.
206 East Grand Oklahoma City

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30	7 Lines	$2.45	$4.20	$5.95	$7.70
4 Lines	1.40	2.40	3.40	4.40	8 Lines	2.80	4.80	6.80	8.80
5 Lines	1.75	3.00	4.25	5.50	9 Lines	3.15	5.40	7.65	9.90
6 Lines	2.10	3.60	5.10	6.60	10 Lines	3.50	6.00	8.50	11.00

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Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

VALVES & FITTINGS — RECONDITIONED—GUARANTEED

Write, wire or phone—New complete inventory of our stock of both steel and cast iron valves and fittings ready for immediate shipment. No priorities required.

Refinery Equipment—Pumps—Pressure Vessels—Tanks

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry or H. J. Galamba
Riverside at Second, Kansas City, Kansas

Robert W. Duden
Twenty-First at Union, Tulsa, Oklahoma

LIQUIDATING LATE TYPE REFINERY

2000 bbl. Pipe Still, 2½" ID x 2 5/16" OD x 20' Tubes Alloy Headers — 2 Heat Exchangers — Complete Copper Sweetening Unit — New Carload Ethyl Plant — Storage Tanks — 30 Pumps, all sizes — Valves — Fittings — Pipe — 2 Gasoline Tank Trucks, 3 Compartments Each.

THE PLAINS OIL & REFINING CORPORATION
GREAT BEND, KANSAS

Reconditioned, Tested and Guaranteed Gate Valves for sale. Large stock, sizes 16" to 2", flanged end and screw end, various pressures.
Stock List and Prices on Request.
THE GATE VALVE SHOP
120 Tuke Box 1936
Pampa, Texas

FOR SALE: Approximately 250—2", 3", 4" and 6" LH EH SL UP Klein Pipe Tongs, used. $1.00 per inch per tong. Patridge, Cities Service Oil, Bartlesville.

20" x 12" ING. Rand Vacuum Pump. Also Compressors, Gas Engines, Bessemer parts. Gilbert Pipe & Supply, Electra, Tex.

FOR SALE: 50—5½" OD Standard IBBM NRS SE CI Gate Valves, unrepaired. $10.00 each. Patridge, Cities Service Oil, Bartlesville, Okla.

FOR SALE—One—40 K.W. Western Electric Generator powered with 60 h.p. Venn-Severin Oil Burning Engine with direct current Exciter. J. C. Ernest, Cosco Oil Co., Wynnewood, Okla.

FOR SALE: 3—16" Baash-Ross Blow-out Preventers. Patridge, Cities Service Oil, Bartlesville.

FOR SALE: 7¼ x 14 Oil Well Power Slush Pump. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: Complete Wilson Portable Rotary Rig with telescoping mast, suitable for 2,000 ft. drilling. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: Casing in two gas well, pipe and gathering lines, fittings and connections, 12½ and 8¼ inch casing, 5½, 2, and 1 inch line pipe, gates and fittings, wells to be plugged and material sold. W. Ben Turner, Trustee, 103 No. 4th St., Sayre, Okla.

FOR SALE

We offer 523, 55-ton all-steel, self-clearing DOUBLE HOPPER CARS consisting of:

160 USRA construction; built 1921-1922; with A-B brakes; 1880 cubical feet capacity.

363 built 1910-1915; with KD-1012 brakes, 1683 feet capacity.

ALL HAVE FULL "U" CAST STEEL TRUCK FRAMES.

Purchaser must buy all.

PRICE: $1700.00 each f.o.t. Pennsylvania

TERMS: Cash with purchase.

DELIVERY CAN COMMENCE IMMEDIATELY AND BE COMPLETED IN ABOUT 60 DAYS—AND VERY POSSIBLY SOONER.

Some $30,000 to $40,000 NEW REPAIR MATERIALS also available which you may wish to have inspected at the same time.

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37 years' experience
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FOR SALE: 6 x 16 Wilson-Snyder Power Slush Pump. Melton Supply Co., Seminole, Okla.

FOR SALE: At Oklahoma City, one Sectional Steel sand or rock storage bin with two dump valves, $350.00. Patridge, Cities Service Oil, Bartlesville, Okla.

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Used Engines, Compressors, Power Plants and Gasoline Plant Equipment.

We Rebuild and Guarantee

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7' x 30' STEEL RIVETED Horizontal Storage Tanks. Also towers, vessels, etc. GILBERT PIPE & SUPPLY, Electra, Tex

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FOR SALE: 27½" Ideal Rotary Table, 5 sheave 200 ton Crown Block, 4 sheave 72" traveling block, 8" Ideal enclosed rotary hook. Melton Machinery & Supply Co., Seminole, Okla.

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FOR SALE: 12 K.W. Portable Light Plant Powered by 35 H.P. International Engine. Melton Supply Co., Seminole, Okla.

FOR SALE: 50—5½" OD 11½V Thd, 200—7" OD 10V Thd and 25—10" 8V Thd., used CI Flat Plugs, cheap. Patridge, Cities Service Oil, Bartlesville, Okla.

FOR SALE: Wilson-Mogul Drawworks with water cooled brakes and 100 H.P. International Motor. Melton Supply Co., Seminole, Okla.

FOR SALE

COMPRESSORS

Complete Repressuring or Air Lift Plant for Immediate Delivery.

2—13 & 5½ x 12 Ingersoll-Rand XOB compressors 400# pressure V-belt driven by 120 H.P. Chicago Pneumatic 3-cylinder vertical gas engines.

2—12 & 7 x 10 Chicago Pneumatic 400# pressure vertical compressors direct connected to 120 H.P. 3-cylinder Chicago Pneumatic vertical gas engines complete.

Used very little — excellent condition. Located on original foundation in Louisiana.

EARL E. KNOX COMPANY
Erie, Penna.

FOR SALE: 30—1½ KW Steam Turbine Generators. $25.00 each. Patridge, Cities Service Oil, Bartlesville, Okla.

FOR SALE: 5 F. C. U. Waukesha Rebuilt Engines with Combination carburetors, clutches and housings. Warner Lewis Company, Tulsa, Okla.

FOR SALE: 85—7" OD 10V Thd. SE 1500-lb. WP CS Hughes Drilling Through Control Gates, unrepaired. $100.00 each. Patridge, Cities Service Oil, Bartlesville.

10—40/15 H. P. General Electric Type K Motors, 220/440 Volt 865 R.P.M. Weatherproof with complete control equipment—In original packages—No priority required. Southwest Equipment Co., 705 Ross Ave., Dallas, Texas.

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25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
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Immediate Delivery
YOU SAVE 25%
Over Cost of New Valves

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Canadian Fields

(Continued from Page 68)

5w4, finished around 1,797 ft., with around 30 bbl. daily, has extended the field 1½ miles to the north, Flobell 1, LSD 12, 29-50-5w4, is cleaning up sand bridges, but is expected to be back on production early in September. This makes a total of 16 producers, with an aggregate output close to 500 bbl. daily. In July the Vermilion Consolidated conditioning plant processed 7,296 bbl., compared with 6,143 bbl. in June, and shipped 33 tank cars of fuel oil. The Canadian National Railways which has requirements approximating 1,000 bbl. daily is advancing funds repayable out of production to facilitate drilling of additional tests. Imperial Oil has located Northwest-Islay 1 in LSD 16, 34-50-5w4, some 18 miles northeast of the producing field.

British Columbia Test

Arrangements are being made for additional tests in the Peace River block of Northern British Columbia where Provincial Government 1 at Commotion Creek finished dry around 5,500 ft. The Commotion Creek well, located to tap the west flank of the structure, crossed the east side of the axial plane of the fold and continued down the east side of the structure. The next test will probably be located farther west, where the limestone will be shallower.

Prince Edward Island

In the Province of Prince Edward Island, Hugh MacKay and associates are planning systematic development. Some preliminary work was done last year, and recently a crew of six from the Seismograph Service Corp. of Tulsa arrived in Charlottetown to carry out a survey. Members of the crew, which will be increased later, are C. S. Rogers, A. M. House, Don H. Evans, Robert Baum, C. D. Hier and George B. Farrell.

Saskatchewan Deep Test

In southern Saskatchewan, Northwest-Radville 1, LSD 16, 36-5-19w2, is below 7,737 ft. The test entered the Madison limestone at 4,979 ft. and the Devonian limestone around 7,400 ft. A number of oil shows were encountered in the Madison which may show a commercial production. Before testing, it is planned to deepen to around 9,000 ft., where the drill is expected to get the underlying Ordovician limestone. The Madison here proved about 2,000 to 2,500 ft. shallower than in the Turner Valley crude area. In addition to the oil horizons already penetrated in the Madison, oil and gas zones are looked for about the middle of the Devonian limestone and in the upper 150 ft. of the Ordovician, the latter corresponding to the Wilcox sand.

Journalisms:

ONCE again the oil industry has given evidence of its patriotism in the present conflict. This time it comes to the fore, as announced by several companies, with a plan whereby its employes have been given further incentive to join the armed forces. The companies will pay dependents of employes in military service sums ranging to one-half of the employes' regular salaries, less what the dependents receive from the Government. For example, if a man who has been drawing $200 per month were drafted, leaving behind a wife and one child, the Government allowances would amount to $40 monthly. The company would pay up to $60, making a total pay of $100, or half of his salary. This is in addition to what the man himself would send his family out of his Army pay. Many companies are already paying employes 3 months' full salary, less government pay, after they go into military service.

Moreover, the employe is assured of getting his job back upon his return from service. This will be at the same salary, and without loss of seniority.

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THIS week the Journal begins a series of articles on the Office of Petroleum Coordinator, and the men that make up this hard-working, hard-hitting staff of experts who are attempting to provide a liaison between the industry and the Government. The initial article on Page 12 is an effort to give credit where credit is due, for nowhere else in Washington can one point to a more diligent, more earnest or more capable group of men in similar service. A well-knit organization has been perfected, which has almost unanimous approval of the industry. Any doubts some might have entertained at the outset as to the efficacy of such an organization have been long since dissipated, for the group has been tried and found not wanting. Succeeding issues will carry on the story.

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LOOKING into the future has been a favorite pastime of man since the days of the necromancer and his little crystal ball. In some cases it must pay dividends as anyone who has attended the performance of a mind reader in a theater can testify.

The value of looking ahead lies mainly in the hope it extends for a better future. For instance, in the oil industry, there may come a time when there will be no fishing jobs, nearly 100 per cent recovery of the oil in place, no missed pay sands and almost no dry holes. At least there will be an approach to this Elysian condition through the development of ideas now going around in the heads of research men or projects being worked on.

Intrigued with the idea of what might come, one of the Journal's staff men started out to find more about these flights into "Imagineering." The result will be an article in an early issue pointing out some of the more conservative ideas of what the future will bring in the way of production technique and equipment.

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CALENDAR

September

PACIFIC COAST GAS ASSOCIATION, annual meeting, St. Francis Hotel, San Francisco, Calif., September 4.

AMERICAN PETROLEUM INSTITUTE, Houston chapter, Houston, Tex., September 9.

AMERICAN CHEMICAL SOCIETY, Petroleum Division, Statler Hotel, Buffalo, N. Y., September 10.

AMERICAN PETROLEUM INSTITUTE, Los Angeles Basin chapter, Division of Production, Shell Oil Co., Inc., Recreation Hall, Long Beach, Calif., September 15.

NATIONAL PETROLEUM ASSOCIATION, annual meeting, William Penn Hotel, Pittsburgh, Pa., September 17-18.

October

INTERSTATE OIL COMPACT COMMISSION, autumn meeting, Palmer House, Chicago, Ill., October 1-3.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, regional meeting, St. Louis, Mo., October 2.

AMERICAN GAS ASSOCIATION, annual meeting, La Salle Hotel, Chicago, Ill., October 5-6.

TEXAS MID-CONTINENT OIL AND GAS ASSOCIATION, twenty-third annual meeting, Dallas, Tex., October 8-10.

WESTERN PETROLEUM REFINERS ASSOCIATION, technical meeting, Wichita, Kans., October 9.

AMERICAN WELDING SOCIETY, annual meeting, Cleveland, Ohio, October 12-15.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, fall meeting, Rochester, N. Y., October 12-14.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Hotel Ambassador, Los Angeles, Calif., October 12-17.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA, thirteenth annual convention, Wichita, Kans., October 19-21.

NATIONAL STRIPPER WELL ASSOCIATION, annual meeting, Wichita, Kans., October 19.

SOCIETY OF AUTOMOTIVE ENGINEERS, Mid west Fuels and Lubricants regional meeting, Tulsa, October 22-23.

NATIONAL LUBRICATING GREASE INSTITUTE, tenth annual meeting, New Orleans, La., October 25-29.

NATIONAL SAFETY CONGRESS AND EXPOSITION, thirty-first annual meeting, Sherman Hotel-Palmer House, Chicago, Ill., October 27-29.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Austin, Tex., October 29-31.

WESTERN PETROLEUM REFINERS ASSOCIATION, technical meeting, Shreveport, La., October 30.

November

CALIFORNIA NATURAL GASOLINE ASSOCIATION, Los Angeles, Calif., November 6.

AMERICAN PETROLEUM INSTITUTE, twenty-third annual meeting, Palmer House, Chicago, Ill., November 9-13.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, thirty-fifth annual meeting, Netherlands Plaza Hotel, Cincinnati, Ohio, November 16-18.

AMERICAN CHEMICAL SOCIETY, national chemical exposition and national industrial chemical conference, Sherman Hotel, Chicago, Ill., November 17-21.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, annual meeting, New York, November 30-December 4.

December

NEW MEXICO OIL AND GAS ASSOCIATION, annual meeting, Artesia Hotel, Artesia, N. M., December 2.

PETROLEUM ACCOUNTANTS SOCIETY OF OKLAHOMA, Hotel Mayo, Tulsa, December 17.

1943

February

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, New York, February 15-18, 1943.

April

AMERICAN PETROLEUM INSTITUTE, Division of Production, Eastern district, William Penn Hotel, Pittsburgh, Pa., April 8-9, 1943.

May

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, annual meeting, Houston, Tex., May 5-6, 1943.